Western Cape Government

Transport and Public Works

PROVINCIAL FREIGHT STRATEGY

I. EXECUTIVE SUMMARY

Introduction

The ability to get goods to market at the right time and at reasonable cost is a cornerstone of an economy. Freight movement is a vital component of economic activity and an accessible and efficient freight transport system is a basic requirement for economic growth.

While the movement of goods is necessary in an economy, if not managed properly freight transport can also have significant negative impacts. Such impacts include high energy use, Greenhouse Gas (GHG) emissions, traffic accidents and excessive costs to maintain transport infrastructure such as roads. These negative impacts have a cost on the economy and society and are contrary to the provision of sustainable transport and broader sustainable development imperatives.

In order to initiate sustainable freight transport delivery in the Western Cape, the provincial Government has developed the Provincial Freight Strategy. The Freight Strategy includes strategic actions to address the key issues in freight transport delivery in the Western Cape, where successful implementation of the Strategy will help in the transition to sustainable freight delivery.

Western Cape Freight Transport Principles

In developing the Freight Strategy, five (5) principles were identified to guide freight transport delivery in the Western Cape. The principles were developed through the review of several national, provincial and local policy imperatives that have an influence on freight transport in the Western Cape. The freight transport principles are ideals that the Western Cape province will strive for. The principles are related to freight delivery best practice and represent the most common themes communicated by the policy documents reviewed. The five (5) principles identified are:

a) Freight Transport Network Efficiency;

b) Inclusive Economic Development;

c) Freight Transport Network Safety;

d) Environmental Sustainability; and

e) Cost Optimisation

These principles are consistent with the requirements for sustainable transport delivery. The United Nations High-Level Advisory Group on Sustainable Transport defines Sustainable Transport as:

"the provision of services and infrastructure for the mobility of people and goods - advancing economic and social development to benefit today's and future generations - in a manner that is safe, affordable, accessible, efficient, and resilient, while minimizing carbon and other emissions and environmental impacts"

By aiming to achieve the identified freight principles, the Freight Strategy will support the development of sustainable transport systems in the Western Cape.

Overview of the Western Cape's freight transport delivery issues, proposed strategic objectives and actions

Several issues currently impact sustainable freight transport delivery in the Western Cape. In developing this Strategy, a status quo review of the Western Cape freight transport landscape was conducted to identify the main issues to be addressed. In the status quo review process, seven (7) Strategic Focus Areas were identified. The Strategic Focus Areas are broad themes or areas of attention where notable progress will lead to an improvement in freight transport delivery in the Western Cape. The Strategic Focus Areas identified when developing this Strategy are presented in Figure I-I. The Freight Strategy was structured around these seven key themes, and strategic objectives and actions were developed to address the issues in each of the strategic focus areas.

Figure I-I: Western Cape Freight Strategic Focus Areas

The main issues in each of the strategic areas are described in the following sections, together with some of the interventions that have been proposed. Resolving the identified issues is important in improving freight transport delivery outcomes in the Western Cape.

Strategic Focus Area 1 - Freight Planning, Coordination and Institutional Arrangements

Sustainable freight transport delivery requires adequate planning to improve decision making, understand resources requirements and manage risks. Also, freight delivery affects several stakeholders across the different spheres of government, the freight industry and the private sector. Appropriate coordination is necessary to ensure strategic alignment among these stakeholders.

Freight planning and coordination in the Western Cape has room to improve. Shortcomings in freight transport coordination exist within the Department of Transport and Public Works (DTPW) and between the DTPW and stakeholders such as other Western Cape Government Departments, local municipalities, the National Department of Transport (DoT) and freight transport service providers, including Transnet and the road freight industry. Coordination of freight transport is impacted by the lack of formal coordinating platforms for freight transport in the province. This makes it difficult to get role players to plan together and align objectives and priorities.

The ability of provincial and local Government to plan and oversee freight transport delivery is impacted by inadequate capacity in these spheres of government. The freight function in the DTPW and in local municipalities in the province is not yet fully developed, and these spheres of Government lack some of the skills critical in freight panning and oversight. As an example, the DTPW has limited rail expertise necessary to improve freight delivery through improved oversight and coordination with Transnet.

Considering the issues described above, the Freight Strategy includes strategic objectives to:

- Strengthen coordination of freight planning and delivery within the DTPW;
- Strengthen coordination of freight planning and delivery between the DTPW, other Western Cape Government Departments, Local Municipalities and other external stakeholders; and
- Improve capacity of provincial and local Government to plan, implement and coordinate freight.

To achieve the above objectives, several strategic actions must be performed during implementation of this Strategy. These actions include the setting up of appropriate coordination platforms/forums, which bring together freight transport role players in the province to improve alignment of objectives.

In addition, a review of the DTPW's organisational structure is required to minimise functional overlaps, prevent functional conflict and optimise the utilisation of available capacity. Also, the DTPW must assess the need to fill vacant positions related to freight to improve capacity to plan and oversee freight transport delivery. Additional actions are included to promote skills transfer between staff in Government

and staff contracted to perform certain freight related work in both provincial and local government to improve capacity in these spheres of Government.

Adequate capacity and improved planning and coordination of freight in the Western Cape are critical in improving freight transport outcomes, and in the successful implementation of this Strategy. As a result, most of the actions related to planning, coordination and institutional arrangements must be performed in the early stages of the Strategy implementation.

Strategic Focus Area 2 - Freight Demand Management

To initiate a more sustainable freight development trajectory, a shift to an approach that includes proactive management of freight demand is necessary. Such an approach aims to minimise the need for certain movement of materials and finished goods and can be likened to Travel Demand Management (TDM) in public transport. Initiatives in freight demand management include efforts to understand the means through which the relationship between freight transport growth and economic growth can be decoupled. When decoupling is achieved, economic growth may not necessarily be linked to a corresponding increase in the demand for freight transport and the negative impacts of freight movement.

Shortcomings exist in the Western Cape freight demand management, which inhibit the development of initiatives for proactive freight transport demand. One of these issues is limited information on freight demand management opportunities in the province. Information on the demand for freight is necessary to support fact-based decision-making regarding demand management. The lack of information limits the Western Cape Province's ability to develop suitable demand-side management initiatives, leading to secondary impacts such as high and increasing freight transport intensity.

Also, improved productivity of freight transport operators is important in reducing unnecessary movement and associated negative impacts such as pollution and damage to road infrastructure. The Western Cape, however, has no formal strategy for promoting or supporting productivity initiatives of the freight sector. This limits the Province's ability to influence and encourage wider adoption of productivity initiatives that optimise the demand for freight movement.

Considering the freight demand management issues above, the following objectives have been included in the Strategy:

- Improve information available to the Western Cape Government regarding freight demand management opportunities in the province;
- Minimise the Western Cape's freight transport intensity by promoting and supporting appropriate freight transport demand-side management measures; and

- Improve productivity in the freight industry by enhancing the Western Cape Government's support of appropriate freight industry productivity initiatives.

The strategic actions to be performed to attain the objectives above include the development of a Freight Demand Mode (FDM) for the Western Cape. An FDM was developed with this Strategy. The FDM will be updated annually, and its output will be used to plan demand management initiatives. Data from the FDM could be used to develop several scenarios for freight demand. These scenarios include initiatives such as local value addition and beneficiation to reduce the demand for long distance freight transport. Over time, the implementation of initiatives such as local beneficiation and improved spatial planning could minimise the demand for certain types of freight movement and reduce the freight transport intensity of the Western Cape.

Ongoing engagement with the freight transport industry, including engagement in the coordination platforms mentioned in Strategic Focus rea 1 is necessary to assess and support initiatives that improve productivity of the freight transport sector. The freight transport sector in the Western Cape province and the Western Cape Government are already assessing initiatives such as high productivity vehicles under Performance Based Standards (PBS). The Strategy includes actions to assess more opportunities to improve productivity of the freight sector.

While most of the demand-side management initiatives will take time to have noticeable impact, it is important for the Western Cape to take first steps to optimise freight transport demand.

Strategic Focus Area 3 – Modal Rebalancing

In line with the rest of South Africa, road freight dominates the land freight transport landscape in the Western Cape. In 2012, an estimated 19% of freight (in tonnes) transported on the corridors in the province was considered rail friendly; however, rail had a 6% freight market share, indicating that more than 68% of rail friendly freight in the Western Cape was transported using other modes, particularly road (Havenga, Goedhals-Gerber, & van Eeden, 2014). The dominance of road freight transport leads to high freight transport costs and externalities.

Modal rebalancing is, therefore, a key component of this Strategy. The optimal freight modal split is achieved when all competing modes of transport achieve market shares in accordance with their comparative cost advantages. When this is achieved, the freight transport costs in the system are optimised.

Initiatives to promote and support the shift of certain freight from road to alternative modes are important in improving the sustainability of freight transport provision in the Western Cape. Considering this, the following modal rebalancing objective has been included in this Strategy:

- Optimise the freight modal share in the Western Cape.

The main strategic actions supporting the above objective include initiatives to promote a shift of freight from road to other modes. These initiatives include the development of information on opportunities to move freight on other modes. The FDM developed with this Strategy includes initial insights on modal shift opportunities in the province. Most of the modal shift opportunities are in rail.

Besides initiatives to assess modal shift opportunities, the Strategy includes actions to develop policies and incentives to promote the shift of freight from road to other modes, particularly rail. These strategic actions include increasing awareness regarding the negative impacts of road freight and assessment of strategies to allocate the cost of externalities to end users.

Implementing these initiatives could, over time, optimise the Western Cape Province's freight transport modal balance and minimise direct and externality costs of moving goods in the province.

Strategic Focus Area 4 – Freight Infrastructure Capacity and Condition

Infrastructure is the backbone of freight transport delivery. Freight transport infrastructure capacity and condition have a direct impact on the efficiency and reliability of the network and are, therefore, critical to ensuring positive outcomes. In addition, the condition of infrastructure has an impact on safety and indirectly influences user preferences of certain modes. For example, part of the greater preference for road freight transport is a result of perceived poor reliability of the rail network owing to underinvestment and deterioration of certain parts of the network. Several infrastructure condition and capacity issues currently impact freight transport delivery in the Western Cape.

One of the main infrastructure issues is the poor condition of certain rail sections, leading to capacity constraints. The poor condition and limited capacity of certain parts of the rail network is partly responsible for the growth in road freight transport over the past few years. A secondary result of the growth in road freight is excessive cost of road infrastructure maintenance, which is worsened by overloading.

Besides rail infrastructure challenges, capacity constraints for certain cargo types at the Ports of Cape Town and Saldanha Bay are a cause of concern and could, over time, negatively impact freight transport delivery in the Western Cape.

The rural road network is important in promoting inclusive economic growth, by supporting economic activity in areas outside the metropolitan areas by linking the rural areas to markets. There are opportunities to improve the condition of rural unsurfaced roads in the Western Cape. Budget constraints have resulted in road maintenance focusing on paved roads, which are used by the greatest number of vehicles in the province, but mostly serve major urban centres.

In response to these freight infrastructure issues, the following objectives have been included in the Freight Strategy:

- Improve capacity, condition and interconnectivity of freight transport infrastructure to meet demand in a sustainable manner; and
- Improve freight network access, including for industries and communities outside of major urban centres through the provision of appropriate infrastructure.

Strategic actions have been proposed to support the above objectives. Most of the initiatives to improve the condition and capacity of infrastructure will be developed and implemented by stakeholders who own this infrastructure, for example Transnet for rail and ports and SANRAL for national roads. Apart from provincial roads, the DTPW indirectly influences activities related to infrastructure development and maintenance. This requires effective coordination and ongoing engagement with key stakeholders who own the infrastructure. Some of the strategic actions in which the DTPW could support infrastructure owners include:

- Developing freight infrastructure for certain areas, through partnerships between the private sector and government. This could include the development of infrastructure to serve rural areas, which private sector operators find unattractive to serve;
- Identifying and motivating for prioritisation of strategic branch lines in the WC in the DoT and Transnet's branch line strategies.
- Identifying locations for future intermodal facilities;
- Identifying additional applications of intermodal technology such as bi-modal semi-trailers, which reduce the need to invest in expensive, fixed infrastructure.

Also, in implementing the Strategy, the DTPW will play a key role in developing frameworks for monitoring the capacity and condition of freight infrastructure, with input from service providers such as Transnet, SANRAL and the DTPW's Road Network Management Chief Directorate. The frameworks will enable the province and stakeholders to be proactive in improving the capacity and condition of freight infrastructure.

The DTPW will use appropriate platforms developed in the planning, coordination and institutional support strategic area for ongoing engagement to identify areas where Government support is required in the provision of adequate network capacity.

Strategic Focus Area 5 - Freight Traffic Management

Effective traffic management and enforcement play a key role in ensuring that the freight transport system in the Western Cape is safe, reliable and efficient. Traffic management authorities enforce the rules of the road and act as a deterrent to non-compliant road users. Examples of non-compliance on the part of freight road users include driver fatigue, the use of unroadworthy vehicles, unlicensed drivers, speeding, drunk driving and overloading. Noncompliance with freight traffic regulation leads to

several issues in the Western Cape. These issues include a high number of freight-related, heavy vehicle crashes, prevalence of overloading on the road network and negative impact (e.g. road infrastructure damage) from the movement of abnormal loads, dangerous goods and general freight.

Considering the impacts of inadequate freight traffic management, the following strategic objectives have been proposed:

- Reduce the number of freight-related, heavy vehicle crashes in the Western Cape;
- Reduce the proportion of overloaded vehicles and the average overload size in the Western Cape; and
- Reduce the negative impact of general freight, abnormal load and dangerous goods movement on traffic flow and infrastructure.

The Freight Strategy includes several actions to support the objectives above. Proposed traffic management initiatives include enforcement measures and incentives to promote compliance with road traffic laws. Enforcement measures include an assessment of the feasibility of establishing one-stop measurement sites for overloading, verification of regulatory compliance regarding permits and licences and checking driver wellness and vehicle roadworthiness. In addition, the Strategy includes actions to review penalty structures for overloading to make them a stronger deterrent. The Strategy includes actions to investigate incentive options such negotiating with the financial services industry for a reduction in the insurance premiums for operators who comply with law enforcement requirements. These incentives could be extended to transport operators who sign up for voluntary compliance programmes such as Road Traffic Management System (RTMS).

Also, the Strategy includes actions to incorporate freight transport requirements into existing road traffic safety programmes such as Arrive Alive.

Considering the current reliance on road freight transport in the Western Cape, better road freight traffic management has potential to deliver significant impact in the short to medium term.

Strategic Focus Area 6 - Technology and Innovation

Technology and innovation are increasingly playing a vital role in improving freight transport delivery and in mitigating some of the negative impacts of freight movement. The Western Cape, therefore, needs to take advantage of opportunities that technology and innovation present to improve freight transport delivery in the province. Technology and innovation currently have a limited role in the Western Cape's freight transport sector. Considering this, the following objective was included in this Freight Strategy:

- Increase the role of suitable technology and innovation in promoting positive freight delivery outcomes in the Western Cape.

The primary strategic action to achieve the above objective is the development of a freight transport technology roadmap for the Western Cape. In developing the roadmap, the province will review currently available and future technologies that could improve freight transport outcomes. Province will engage freight transport operators in developing the roadmap. This will enable Province to support initiatives that industry may already be developing and to align these initiatives with provincial objectives and policy.

Strategic Focus Area 7 - Freight Data and Information Management

Data and information management are becoming increasingly critical in decision making. Fact-based decisions regarding freight movement in the Western Cape require several data sources. Also, data and information governance is important in improving the value of the data in decision making. This includes measures to prevent duplication of data gathering efforts and to improve the quality of data available for decision making.

Several data and information management shortcomings exist in the Western Cape and these prevent the development of fact-based, data driven strategy and programmes. These issues include the existence of fragmented information systems, insufficient data sharing and manual data collection processes that are slow and prone to error.

To address these issues, the following strategic objective has been included in the freight Strategy:

- Improve freight data collection, analysis and information systems management in the Western Cape.

To achieve the above objective, some of the strategic actions proposed include the development of a Western Cape Transport Data and Information Management and Governance Strategy and investigation of technologies and innovation to improve data collection and processing. The Western Cape province has an ongoing Integrated Transport Intelligence Hub Programme, incorporating the Transport Hub, under which some of the freight data and information management strategic actions could be performed. Implementation of freight transport data and information management actions must be coordinated with related work under the Transport Hub.

Implementation of the Western Cape Freight Strategy

To complement the Freight Strategy an Implementation Programme has been developed to guide practical implementation and application of the strategic

content. It provides a step by step approach required to achieve the strategic objectives supporting the vision and helps to translate strategic actions into a realistic plan that will ultimately drive impact.

The comprehensive list of strategic actions developed as part of the Draft Freight Strategy have been included in this Implementation Programme. However, due to complexities of implementing many of the actions, an incremental approach has been adopted. The Freight Strategy Implementation Programme has, therefore, been separated into two stages, a preparatory stage (Stage 1) made up of initial actions, and a second stage (Stage 2) made up of a more comprehensive list of actions representing the bulk of the strategic contents. The initial actions are to be implemented in the Western Cape Government's 2018/19 financial year, while the full list of strategic actions will be implemented in 2019/20 financial year and beyond.

Taking guidance from a similar approach adopted under the Provincial Sustainable Transport Programme (PSTP), the incremental approach envisaged for implementation of the Western Cape Freight Strategy has several key components that aim to get the basics right with regards to freight transport delivery. This is needed to build a robust foundation from which implementation of the proposed strategic actions will progress. These basic requirements include capacity in provincial and local government to perform functions that are crucial to the delivery of strategic outcomes. In addition, data and information are critical in setting baselines and realistic targets for strategic objectives and actions. Some of these basics require improvement before most of the strategic actions are performed.

The incremental approach to implementation of the Freight Strategy is divided into two stages as outlined in Figure I-II.

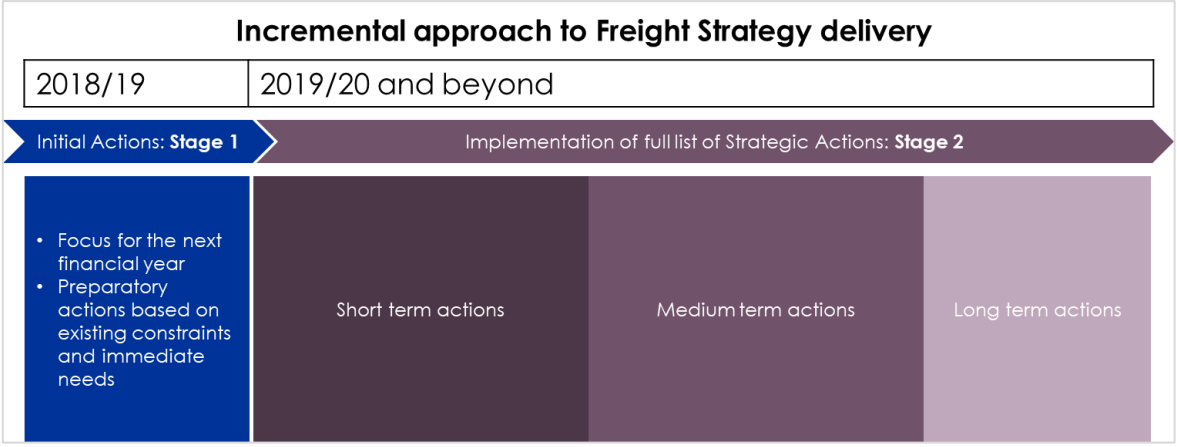

Figure I-II: Incremental Approach to Freight Strategy Implementation

Stage 1 of the Freight Strategy Implementation

Stage 1 of the Freight Strategy Implementation is planned for the 2018/19 Financial Year of the Western Cape Government. The targeted outcomes of this stage are:

- Development of adequate internal capacity and provision of sufficient resources to the DTPW entities responsible for performing certain actions of the Freight Strategy;
- Development of strong partnerships within the DTPW and Western Cape Government, and across the other spheres of government;
- Improving Government's relationship with operators and the private sector as a basis for continual coordination regarding Freight Strategy initiatives;
- Establishment of clear mandates, roles and responsibilities among the various stakeholders;
- Setting up a performance measurement process to track the progress of both the DTPW and the Province in achieving the strategic objectives outlined in the Freight Strategy; and
- The collection of adequate data and generation of freight performance metrics to inform decision making and to assess the effectives of the interventions proposed in the Freight Strategy.

The actions to be performed in Stage 1 are summarised in Table I-I.

Table I-I: Stage 1 Actions

Summary of Key Areas of Focus for the Stage 1 Actions
Review of existing planning and coordination fora to ensure adequate freight inclusion.
Finalise the Freight Implementation Programme: • Refine actions and indicators, set baselines and targets, prioritisation of actions. • Determine resource requirements and assign responsibilities.
Finalise Western Cape Transport Implementation programme [1] and incorporate relevant freight actions.
Fill existing DTPW vacancies and determine additional resources and capacity requirements for freight delivery.
Ensure ongoing updates of the Freight Demand Model (FDM) and ensure adequate skills transfer.

[1]Actions from the Western Cape Freight Strategy will be incorporated into an overall Western Cape Transport Implementation Programme, which includes broad provincial transport interventions

Summary of Key Areas of Focus for the Stage 1 Actions
Ensure inclusion of freight in Western Cape Transport Data Hub.

Stage 2 of the Freight Strategy Implementation

This stage involves the implementation of the full set of strategic actions as listed in the strategic programmes. The full set of actions, including the proposed draft performance indicators, expected results and the preliminary assignment of roles and responsibilities, is presented in the detailed logical framework attached to the detailed Implementation Programme for the Freight Strategy.

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Acronyms And Abbreviations

SHORT TERM	FULL TERM
ACSA	Airports Company of South Africa
ALTC	Abnormal Loads Technical Committee
AMSA	ArcelorMittal South Africa
ANPR	Automatic Number Plate Recognition
ASOD	Average Speed Over Distance
ATD	Average Travel Distance
AV	Abnormal Vehicle
BELCON	Bellville Container Terminal
BTS	Bureau for Transport Statistics
CAPCOR	Gauteng-Cape Town Corridor
CBM	Central Buoy Mooring
CHEC	Cape Higher Education Consortium
COCT	City of Cape Town
CTIA	Cape Town International Airport
DEA&DP	Department of Environmental Affairs and Development Planning
DEDAT	The Department of Economic Development and Tourism
DOLG	Department of Local Government
DOT	Department of Transport
DPE	Department of Public Enterprises
DTPW	Department of Transport and Public Works
EPWP	Expanded Public Works Programme
FDM	Freight Demand Model
GDP	Gross Domestic Product
GFB	General Freight Business

SHORT TERM	FULL TERM
IAP	Intelligent Access Program
ICT	Information and Communication Technologies
IDP	Integrated Development Plan
IDZ	Industrial Development Zone
I-PAS	Provincial Analysis System
IPC	Intermodal Planning Committee
ISO	International Organisation for Standardisation
ITP	Integrated Transport Plan
IWMP	Integrated Waste Management Plan
KMIA	Kruger Mpumalanga International Airport
KZN	Kwazulu-Natal
LAM	Legal Axle Mass
LTAB	Land Transport Advisory Board
MDS	Market Demand Strategy
MOU	Memorandum of Understanding
MT	Metric Ton
MTSF	Medium Term Strategic Framework
MVL	Motor Vehicle Licence
NATIS	National Traffic Information System
NATMAP	National Transport Master Plan
NFLS	National Freight Logistics Strategy
NLTA	National Land Transport Act (No.5 of 2009)
NLTSF	National Land Transport Strategic Framework
NPC	Non-profit Company
NRTA	National Road Traffic Act (No. 93 of 1996)

SHORT TERM	FULL TERM
NSW	New South Wales
NWMS	National Waste Management Strategy
OACL	Ocean Africa Container Lines
OCS	Overload Control System
OEM	Original Equipment Manufacturer
ORTIA	O.R. Tambo International Airport
PBS	Performance-Based Standards
PDP	Professional Development Programme
PPP	Public Private Partnership
PRMTCC	Provincial Road Traffic Management Coordinating Committee Work Group
PRSA	Ports Regulator of South Africa
PSC	Provincial Skills Coordination
PSDF	Provincial Skills Development Forum
PSDF	Provincial Spatial Development Framework
PSDP	Provincial Spatial Development Plan
PSG	Provincial Strategic Goal
PSO	Provincial Strategic Objective
PSO3	Provincial Strategic Objective 3
PSP	Private Sector Participation Plan
PTLF	Provincial Land Transport Framework
PTMF	Provincial Transport Management Forum
PTMS	Provincial Transition Management Structure
PTSC	Provincial Transport Steering Committee
R&D	Research and Development

SHORT TERM	FULL TERM
RAMP	Road Asset Management Plan
RSDF	Regional Spatial Development Framework
RSR	Railway Safety Regulator
RTMC	Road Traffic Management Corporation
SACAA	South Africa Civil Aviation Authority
SANRAL	South African National Road Agency Limited
SAPS	South African Police Service
SOC	State-Owned Company
SOE	State Owned Entity
SPM	Single Point Mooring
TDA	Transport and Urban Development Authority
TDI	Transport Development Index
TETA	Transport Education Training Authority
TEU	Twenty Foot Equivalent
TFNSW	Transport for New South Wales
TFR	Transnet Freight Rail
TPA	Transport Performance and Analytics
TRH	Technical Recommendations for Highways
UAV	Unmanned Aerial Vehicle
US	United States
VLM	Vehicle Load Monitor
WCFFI	Western Cape Fine Foods Initiative
WCG	Western Cape Government
WCIF	Western Cape Infrastructure Framework
WIM	Weigh-in-Motion

Western Cape Government

Transport and Public Works

INTRODUCTION AND PROJECT BACKGROUND

1 INTRODUCTION

1.1 Background

The ability to get goods to market at the right time and at reasonable cost is a cornerstone of an economy. Freight movement is a vital component of economic activity and an accessible and efficient freight transport system is a basic requirement for economic growth.

While the movement of goods is necessary in an economy, if not managed properly freight transport can have negative impacts. Such negative impacts include high energy use, Greenhouse Gas (GHG) emissions, traffic accidents and excessive cost of maintaining transport infrastructure such as roads. These negative impacts have a cost on the economy and society and are contrary to sustainable transport provision and the broad sustainable development imperative.

Currently, the demand for freight transport in the Western Cape is growing one (1) percentage point faster than the provincial economy (Western Cape Department of Transport and Public Works, 2013). This results in high freight transport cost and externalities. For the Western Cape, the demand and cost of freight transport are compounded by the province's geographic location, far from sources and markets of goods. In addition, the dominance of road freight transport, which has higher cost and externalities than other modes such as rail is a major factor in freight transport cost and externalities for the province.

The efficiency of the freight transport network for the Western Cape is negatively impacted by poor condition and inadequate capacity of key infrastructure such as certain sections of the rail network and ports. The historical poor condition of certain infrastructure is partly responsible for the existing modal imbalance. The poor condition of infrastructure has led to low reliability of certain modes and industry perceptions of such modes are negative, leading to wider adoption of road even for transporting freight that is more suited to being moved by other modes.

As a result, interventions are required to improve the efficiency of freight delivery in the Western Cape to optimise cost and to initiate a sustainable path to economic growth. Such interventions include measures to optimise the freight transport network in the short term and strategies to reduce the demand for certain freight movements in the long term.

This Freight Strategy was developed to identify appropriate interventions to improve freight transport outcomes in the Western Cape.

1.2 Purpose

The purpose of the provincial freight strategy is to provide an action plan for improving the Western Cape's freight transport network's ability to meet the demand for the movement of goods reliably, at optimal cost and in a sustainable manner to support the province and South Africa's development goals.

The requirement for freight strategies is stipulated in the National Land Transport Act (No.5 of 2009) (NLTA). Section 37 (1) of the NLTA states that:

"planning authorities must develop a freight transport strategy, with due regard to national and provincial policy, covering the transporting of goods to, from and through the area by road, taking into account —

> *(a) the movement of goods to, from, and through the area by rail or pipeline; and*
>
> *(b) the movement of goods to and from ports or airports."*

In addition, the NLTA requires freight strategies to identify routes for moving goods, to promote seamless movement and to avoid conflict with road traffic. Freight strategies must also include plans for the movement of dangerous substances.

The NLTA requires freight transport strategies to be developed at local level but most local municipalities currently lack capacity to develop these strategies. The provincial freight strategy aims to address the key issues in freight delivery in the province, including issues affecting the local sphere of government. The provincial freight strategy includes interventions to mitigate capacity constraints at local level to enable the local sphere of government to develop freight strategies in future, if appropriate. In certain municipalities the volume of freight is too low to justify local freight strategies and the needs for such municipalities are more optimally addressed through a provincial strategy.

The provincial freight strategy supports several national and provincial strategies and policies. These strategy informants are discussed in greater detail in Chapter 1.

1.3 Methodology

1.3.1 Project Process

The Western Cape Freight Strategy builds on the Provincial Land Transport Framework (PLTF, (2016/17 – 2020/21)). The PLTF is the main transport policy document for the province and therefore provides a base for the Freight Strategy. The steps taken in developing the freight strategy are summarised in Figure 1-1.

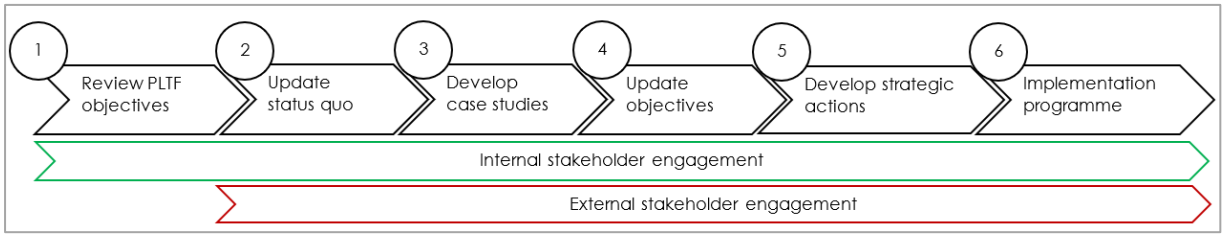

Figure 1-1: Project process

1.3.1.1 Step 1: Review of PLTF Objectives

The PLTF (2016/17 – 2020/21) includes several freight strategic objectives, which were referred to during the development of the Freight Strategy. The PLTF (2016/17 – 2020/21) objectives were reviewed to ensure alignment with the needs of the Freight Strategy. The PLTF (2016/17 – 2020/21) objectives review process also served to identify important freight delivery issues for which additional objectives were required, based on the issues raised in the PLTF status quo review of the Western Cape freight

landscape. The main deliverables of the PLTF (2016/17 – 2020/21) objective review was a set of preliminary objectives for the Freight Strategy and a list of areas where additional information was required to support the development of appropriate strategic initiatives.

1.3.1.2 Step 2: Updates to the Western Cape Freight Status Quo Review

The PLTF (2016/17 – 2020/21) includes a status quo of the Western Cape province freight landscape. Updates to the PLTF (2016/17 – 2020/21) status quo were made to reflect any changes in the freight delivery issues over the period between finalising the PLTF (2016/17 – 2020/21) and commencing work on the Freight Strategy. The status quo update step also served to address information gaps identified during the review of PLTF objectives.

1.3.1.3 Step 3: Development of Case Studies

Case studies were developed to identify freight delivery best practices and lessons learnt in other countries. Where applicable, the best practices and lessons informed certain strategic objectives and actions, taking the Western Cape's unique characteristics into consideration.

1.3.1.4 Step 4: Updates to Preliminary Objectives

This step involved refinement of the preliminary objectives developed in Step 1 to incorporate insights from the status quo update and from case studies. Such insights included input received from stakeholders consulted during the status quo update. The refined objectives were reviewed by relevant stakeholders and comments received were incorporated.

1.3.1.5 Step 5: Development of Strategic Actions

Strategic actions were developed for all strategic objectives developed in Step 4 above. The strategic actions are specific tasks that must be successfully performed to achieve the objectives. Also, relevant stakeholders were consulted in developing the strategic actions and feedback received was incorporated.

1.3.1.6 Step 6: Development of an Implementation Programme

The implementation programme outlines a structured approach for executing the strategic actions to realise the objectives for the freight strategy. This step included the following tasks:

- Development of appropriate Key Performance Indicators (KPIs) for the strategic objectives and actions;
- Prioritisation of the strategic objectives and actions;
- Assignment of roles and responsibilities for performing strategic actions;
- Identification and allocation of resources required to deliver on strategic actions; and
- Risk assessment and mitigation.

Relevant stakeholders, particularly within the DTPW, were consulted during the development of the implementation programme.

1.3.2 Stakeholder Engagement

Freight transport delivery affects several parties and decisions made by certain role players in the Western Cape and in South Africa have an impact on freight delivery. As a result, consultation with affected parties and decision makers in the Western Cape freight sector was necessary to develop a strategy that can be successfully implemented, and that stakeholders will buy into. Two main stakeholder groups were identified, namely:

- Internal stakeholders – in developing the Freight Strategy, internal stakeholders were defined as role players and affected parties in the Western Cape Department of Transport (DTPW).
- External stakeholders – in developing the Freight Strategy, external stakeholders were defined as any other role players and affected parties outside the DTPW, including parties in other Western Cape Government departments, local municipalities, national government and industry.

The key stakeholders to consult were identified through a stakeholder mapping process and a stakeholder register was compiled.

1.4 Structure of the Document

This document has five (5) chapters. The next four (4) chapters are briefly described below:

- **Chapter 2:** Outlines the various national, provincial and local policy imperatives that inform the Freight Strategy. The chapter also includes freight transport delivery principles to be aimed for.
- **Chapter 3:** Provides a review of the status quo of freight transport delivery in the Western Cape. The primary purpose of the chapter is to identify current freight transport delivery challenges and shortcomings that the strategy should address.
- **Chapter 4:** Outlines the strategic objectives and supporting actions that must be performed successfully to improve freight transport delivery in the Western Cape. This chapter outlines the strategy for addressing the issues identified in the status quo review.
- **Chapter 5:** Outlines the implementation programme to achieve the strategic objectives for freight transport delivery in the Western Cape.

2 STRATEGY INFORMANTS AND FREIGHT PRINCIPLES

Several national, provincial and local policy imperatives have an influence on transport, including freight transport, in the Western Cape. It is necessary for freight strategy developed for the Western Cape to align with such policy. In formulating the Western Cape freight strategy, a review of these policy imperatives was conducted and principles that govern freight delivery in the province were identified.

The freight transport principles are ideals that the Western Cape province will aim for. The principles are related to freight delivery best practices and most policy documents reviewed communicated similar themes.

An overview of the policies reviewed, and identified themes that inform the principles are presented in Table 2-1 and Table 2-2 below:

Table 2-1: Key themes from select national policy documents

Policy	Relevant Components (paraphrased)	Key Themes
National Development Plan 2030	*Need to respond effectively to climate change.*	• Environmental Sustainability
	Action 28: *Consolidate and selectively expand transport and logistics infrastructure.*	• Efficiency
2014 – 2019 Medium Term Strategic Framework (MTSF)	***Outcome 6: Sub-Outcome 3 - Maintenance****, strategic expansion,* ***operational efficiency, capacity*** *and* ***competitiveness*** *of the logistics and transport infrastructure.*	• Efficiency • Cost Optimisation
	Outcome 10: Sub-Outcome 2 - *An* ***effective climate change mitigation*** *and adaptation response.*	• Environmental Sustainability
National Transport Master Plan (NATMAP)	***Goal*** *is to develop a dynamic, long term, and* ***sustainable*** *land use/multi-modal transportation systems……and service delivery that is responsive to* ***socio-economic growth*** *strategies.* ***Objectives*** *include:*	• Environmental Sustainability • Efficiency • Economic Development

Policy	Relevant Components (paraphrased)	Key Themes
	Maximizing utilization *of existing infrastructure facilities;* *Development of future infrastructure facilities and* ***improve operations****;* *Promote* ***effectiveness and efficiency*** *of maritime transport; and* *Determining the* ***economic role of transport****.*	
National Land Transport Strategic Framework (NLTSF)	***Overarching goals*** *- Improve* ***safety and security****, reduce* ***transport impact on the environment*** *and* ***promote sustainable transport modes****.*	• Safety • Environmental Sustainability
National Freight Logistics Strategy (NFLS)	*Vision of the DoT is to provide* ***safe****, reliable, effective,* ***efficient*** *and fully integrated transport systems.*	• Safety • Efficiency
National White Paper on Transport Policy, 1996	***Vision*** *is to provide* ***safe, reliable, effective, efficient, and fully integrated transport operations and infrastructure*** *that meets the needs of* ***freight and passenger customers****……****improving levels of service*** *and* ***cost****……supports* ***economic*** *and* ***social development*** *whilst being* ***economically and environmentally sustainable****.*	• Efficiency • Cost Optimisation • Economic Development • Environmental Sustainability • Safety
Draft White Paper on Transport Policy, 2017	***Vison*** *is to position rail as an* ***affordable****,* ***competitive****,* ***effective****, integrated,* ***reliable****,* ***safe****,* ***sustainable*** *and valued transport mode that provides the backbone of South Africa's freight logistics and passenger mobility systems and strengthens its* ***economic growth*** *and* ***social development.***	• Cost Optimisation • Efficiency • Environmental Sustainability • Safety • Economic Development

Policy	Relevant Components (paraphrased)	Key Themes
Draft National Road Freight Strategy	***Vison*** *is to position rail as an* ***affordable***, ***competitive***, ***effective***, *integrated,* ***reliable***, ***safe***, ***sustainable*** *and valued transport mode that provides the backbone of South Africa's freight logistics and passenger mobility systems and strengthens its* ***economic growth*** *and* ***social development.***	• Cost Optimisation • Efficiency • Environmental Sustainability • Safety • Economic Development

Table 2-2: Key themes from select provincial policy documents

Policy	Relevant Components (paraphrased)	Key Themes
Provincial Strategic Plan	***PSG-1: Key levers*** ***Economic Development***……... *…. build an* ***efficient*** *transport system.*	• Economic Development • Efficiency
	PSG-3: *Increasing* ***wellness***, ***safety*** *and tackling social ills.*	• Safety • Environmental Sustainability
	PSG-4*: Enabling a resilient,* ***sustainable****, quality and inclusive living environment.*	• Environmental Sustainability
Provincial Infrastructure Framework	***Optimised Transport Agenda:*** *High priority for the CAPCOR to* ***reduce freight costs*** *and* ***lower emissions****.*	• Cost Optimisation • Sustainability
	Optimised Transport Agenda: *High priority for general freight rail lines to keep existing primary lines* ***functional and efficient****.*	• Efficiency
Provincial Spatial	***PSDF's Spatial Logic Connect*** *aims to* ***connect urban and rural markets and***	• Environmental Sustainability

Policy	Relevant Components (paraphrased)	Key Themes
Development Framework (PSDF)	***consumers**, fragmented settlements and critical biodiversity areas (i.e. freight logistics, public transport, broadband, priority climate change ecological corridors, etc.)* ***Spatial Policy R4** requires **promotion of a shift from road to rail freight to mitigate climate change.*** ***Spatial Policy S2** requires promotion of the upgrading of existing rail infrastructure to offer **higher levels of service** while developing combined road and rail transport corridors to provide a real alternative to road transport for passengers and freight.*	• Efficiency • Economic Development
Western Cape Provincial White Paper on Transport	***Vision** is to develop an integrated, accessible, **well managed and maintained transport system** throughout the Western Cape…. **making efficient use of resources** and being socially just, in a way that **advances broader developmental** aims and objectives.*	• Efficiency • Environmental Sustainability • Economic Development
DTPW Strategic Goals	***DSG-1:** Maximise empowerment and **job creation** in the Western Cape.*	• Economic Development
	***DSG-3:** Deliver **safe**, **efficient**, **integrated** transport systems in the Western Cape.*	• Safety • Efficiency • Economic Development

2.1 Western Cape Freight Principles

Based on the themes from the policy document review, five (5) freight delivery principles were identified. The principles are as follows:

a. **Freight Transport Network Efficiency** - Several definitions of transport efficiency exist, and the most appropriate one depends on the purpose of study. The

definition adopted for this Strategy considers the relationship between productive resources (vehicles, infrastructure, labour etc.) input to the transport system and the resulting capability to satisfy demand. Under this definition, the best freight transport system efficiency is achieved when the fewest productive resources are required to meet certain transport demand. As an example, a network that is congested has low efficiency because the slow movement of vehicles reduces the demand that such vehicles can meet. A less congested network allows faster movement, which increases the demand that can be addressed by certain productive resources, increasing the efficiency of the system.

b. **Inclusive Economic Development** - The Western Cape Government (WCG) aims is to grow the provincial economy and create jobs by providing a conducive environment for businesses. This intention is encapsulated in the **Provincial Strategic Goal (PSG) 1: Creating opportunities for growth and jobs.** Provision of an efficient transport system was identified as one of the key components of the infrastructure and land-use levers for achieving PSG1.

c. Inclusive economic growth ensures that economic growth is equitable and benefits all regions and leads to creation of opportunities for the marginalised and vulnerable. Provision of freight transport systems therefore must meet the needs of all regions, including the needs of rural regions with potential for economic growth. The Freight Strategy includes initiatives for assessing and meeting such needs.

d. **Freight Transport Network Safety** - The movement of freight has inherent hazards that must be managed to prevent injury to other users of the transport network and damage to equipment, transported goods and infrastructure. While freight transport network safety is an important consideration for all freight transport modes, it is more critical in road freight because of the risk posed to passenger transport users. The Freight Strategy includes initiatives to improve the safety of freight transport delivery in the Western Cape.

e. **Environmental Sustainability** - Environmental sustainability is a state in which the demands placed on the environment can be met without reducing its capacity to allow all people to live well, now and in the future. Freight transport places demands on the environment because of carbon emissions from hydrocarbon energy sources on all modes. Other negative environmental impacts include noise pollution and land use in the provision of infrastructure such as roads. These negative impacts have a cost on society and must be mitigated. The Freight Strategy includes initiatives for reducing these negative impacts to promote positive freight delivery outcomes.

f. **Cost Optimisation** - Freight transport cost is a key component of cost of goods traded in the economy. As a result, optimising freight transport cost is important in promoting economic competitiveness and improving affordability of goods and services to consumers. The Freight Strategy includes an assessment of freight transport costs and appropriate interventions to optimise the cost.

2.1.1 Alignment with Sustainable Transport Systems

Sustainable transport systems are a key component of the sustainable development imperative and the NLTSF has a clear requirement for the development of sustainable transport systems. In addition, other national and provincial policy imperatives, notably the National Development Plan (NDP), the National Strategy for Sustainable Development (NSSD), the Provincial Strategic Plan (PSP) and the Provincial Spatial Development Framework (PSDF) have requirements that are aligned with the provision of sustainable transport systems.

The United Nations High-Level Advisory Group on Sustainable Transport defines Sustainable Transport as:

"the provision of services and infrastructure for the mobility of people and goods - advancing economic and social development to benefit today's and future generations - in a manner that is safe, affordable, accessible, efficient, and resilient, while minimizing carbon and other emissions and environmental impacts [2].

It is clear from the definition above that sustainable transport provision is overarching and encompasses all the key themes identified in Table 2-1 and Table 2-2.

As a result, by aiming to achieve the identified freight principles, the Freight Strategy will support the development of sustainable transport systems in the Western Cape.

2.2 Strategic Focus Areas

Strategic focus areas are broad themes or areas of attention where notable progress will lead to an improvement in the Western Cape freight transport delivery. Strategic focus areas provide a structured way of grouping the freight delivery issues in the Western Cape into strategic programmes. The PLTF (2016/17 – 2020/21) status quo was used to identify the primary areas that require attention in the Western Cape for freight delivery to align with the identified freight principles.

The strategic focus areas identified, together with the freight principles, are presented in Figure 2-1. Most sections of this Freight Strategy are organised according to the strategic focus areas.

[2] Mobilising Sustainable Transport for Development - Analysis and Policy Recommendations from the United Nations Secretary-General's High-Level Advisory Group on Sustainable Transport, 2016.

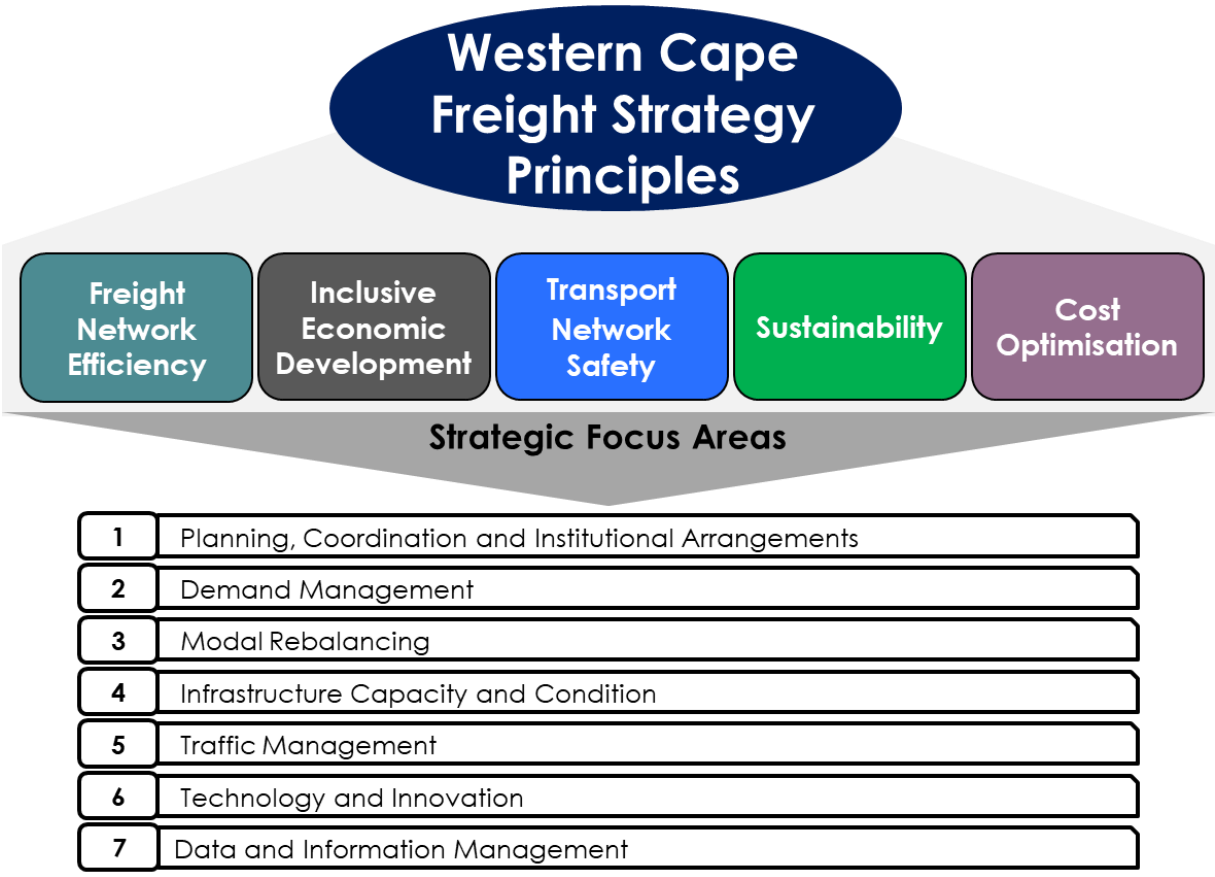

Figure 2-1 Freight Principles and Strategic Focus Areas

Subsidiary strategic objectives were developed under the strategic focus areas and are discussed in Chapter 4, together with the strategic actions to achieve the objectives.

Western Cape Government

Transport and Public Works

WESTERN CAPE FREIGHT TRANSPORT LANDSCAPE

3 THE WESTERN CAPE FREIGHT TRANSPORT LANDSCAPE

A status quo review of the province's freight transport landscape was conducted to identify the key issues in freight transport delivery in the Western Cape. The status quo review served as a basis for defining the main problems to be addressed by the Freight Strategy. As discussed in Section 1.3, the status quo review built on work done in the PLTF (2016/17 – 2020/21). The status quo update was primarily completed through:

a. Desktop review of relevant policy documents and literature that provides information on specific freight issues and needs in the Western Cape; and
b. A stakeholder engagement process, which involved reaching out to stakeholders in the Department of Transport and Public Works (DTPW), other Western Cape Government departments and important sector stakeholders, such as Transnet.

The information presented in this chapter is a consolidation of the key issues from the PLTF (2016/17 – 2020/21) status quo and additional facts gathered during the status quo update.

3.1 Structure of this Chapter

This chapter is organised according to the seven (7) strategic focus areas identified and introduced in Section 2.2. The status quo review is divided into seven (7) main sections, each discussing the issues pertaining to a single strategic focus area.

3.2 Status quo of Western Cape Freight Planning, Coordination, and Institutional Arrangements

3.2.1 Freight Mandates and Responsibilities

The Western Cape freight sector is populated by a diverse set of stakeholders, ranging from government departments to state-owned entities (SOEs) and the private sector. Each of these stakeholders has a different role (some legally defined) and areas of responsibility. This dynamic increases the importance of integrated planning and coordination amongst the stakeholders. The key stakeholders in the Western Cape freight sector are outlined in Figure 3-1.

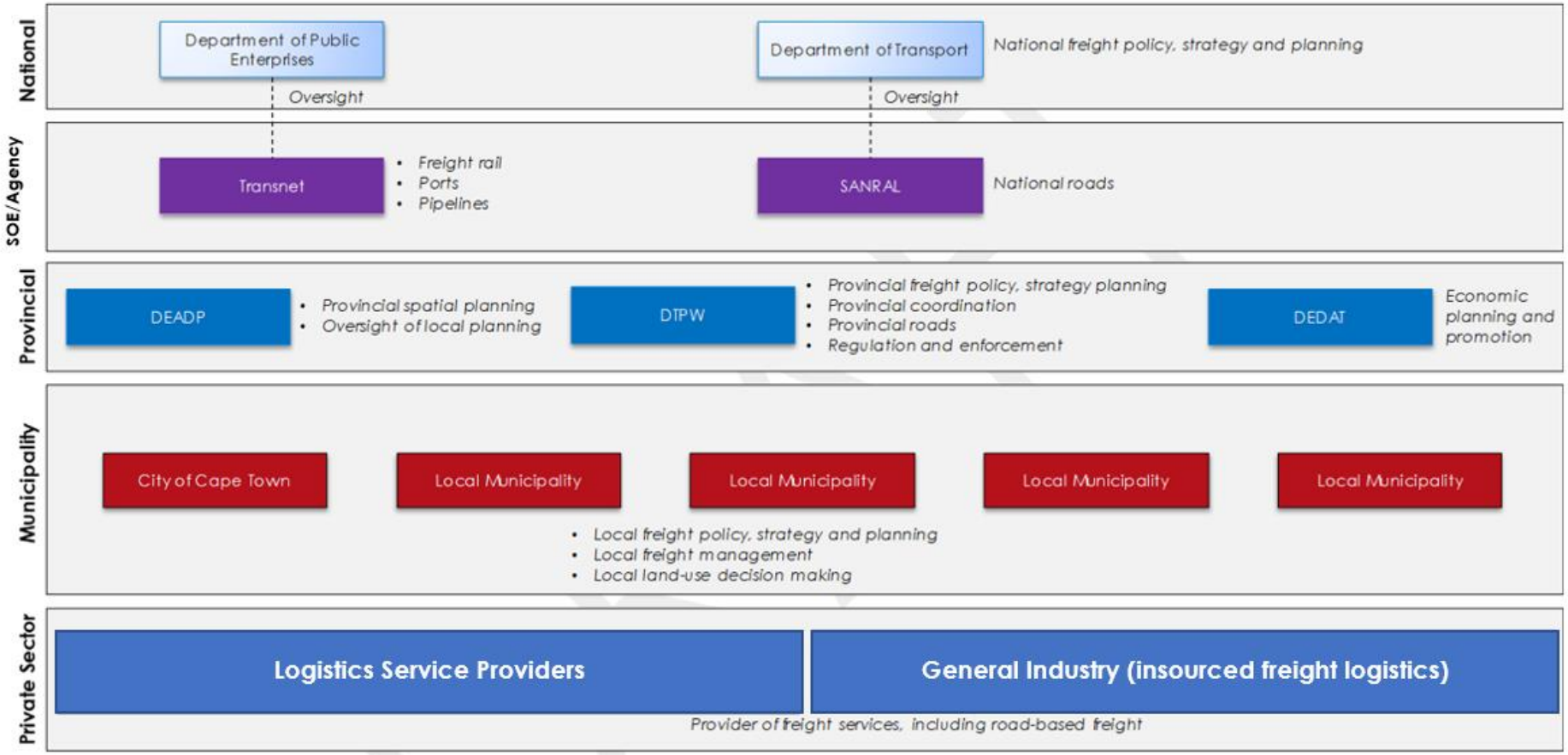

Figure 3-1: Stakeholders for freight in the Western Cape, including key functions

3.2.1.1 Government Mandates

Government freight mandates are primarily informed by the Constitution and the National Land Transport Act (No.5 of 2009) (NLTA).

From a planning perspective, each sphere of government is in charge of developing policy, strategy and plans for its area of responsibility. However, planning across the spheres should be aligned. Therefore, provincial planning should align to national planning, and local planning should align to provincial planning.

Within this framework, local government has planning responsibility for local freight movement, provincial government for intra-provincial movement across multiple municipalities and national government for interprovincial movement. However, the divisions between these different movement types and their impact are not always so clear-cut.

For example, the effective movement of freight from Cape Town to Gauteng is a planning responsibility of the national sphere. However, this movement has local and provincial implications that ultimately require an intergovernmental response.

3.2.1.2 National Government

National Government through the National Department of Transport (DoT) is responsible for national transport policy and strategy, as well as national transport planning and coordination. This includes national freight policy, strategy, planning and coordination.

National Government's responsibilities also include the preparation of the National Land Transport Strategic Framework (NLTSF), to which policy, strategy and planning at the provincial level should be aligned.

The national sphere is also responsible for developing the capacity of provincial and local government to perform their land transport functions.

A number of public entities report directly to the DoT and support the department in delivering on its mandate, particularly in regulating sectors of the transport industry. The entities relevant to freight transport are listed in Section 3.2.1.3.

The National Department of Public Enterprises, as the sole shareholder, oversees the State-Owned Company (SOC) Transnet Ltd. Transnet is a central stakeholder in the freight sector and its role is described in more detail in Section 3.2.1.3.

3.2.1.3 Public/State-Owned Entities and Agencies

3.2.1.3.1 Transnet

Transnet is a fully state-owned "integrated freight transport company" (Transnet, 2017) and includes five operating divisions, namely:

- Transnet Freight Rail;
- Transnet Rail Engineering (rolling stock maintenance);
- Transnet National Ports Authority;
- Transnet Port Terminals; and

- Transnet Pipelines [3]

The company fully controls all major freight rail, port and pipeline activity in South Africa, including the major rail infrastructure in the Western Cape (excluding parts of the Cape Town network owned by PRASA), the ports of Cape Town, Mossel Bay and Saldanha and the associated terminals, and the Belcon intermodal facility.

3.2.1.3.2 SANRAL

The South African National Roads Agency Ltd (SANRAL) is an autonomous agency of the National Department of Transport and is responsible for financing, improving, managing, maintaining and upgrading the national road network. Given that there are significant freight volumes using the national road network in the Western Cape (N1, N2 and N7), SANRAL is an important stakeholder in the broader effort to improve freight outcomes in the province.

3.2.1.3.3 South African Civil Aviation Authority

The South African Civil Aviation Authority (SACAA) is responsible for promoting, regulating and enforcing civil aviation safety and security standards throughout the aviation industry. It reports directly to the DoT and is a key stakeholder in matters relating to air freight.

3.2.1.3.4 Airports Company South Africa

The Airports Company South Africa (ACSA) is majority (74.6%) owned by the National Government and is responsible for managing nine (9) airports in South Africa, including the Cape Town International Airport (CTIA). The DoT provides oversight on the company. ACSA is an important stakeholder in air freight.

3.2.1.3.5 Ports Regulator of South Africa

The Ports Regulator of South Africa (PRSA) regulates the activities of the ports industry in accordance with the policy and legislative mandate of the state and directly reports to the DoT. PRSA is an important stakeholder in the freight sector in the Western Cape, especially in decisions relating to the three ports in the province.

3.2.1.3.6 Railway Safety Regulator

The Railway Safety Regulator (RSR) is an agency of the Government of South Africa that oversees safety of railway transport. The agency investigates accidents and incidents related to railways and operators remain responsible for ensuring the safety of rail transport. The RSR was established through the National Railway Safety Regulator Act, Act 16 of 2002.

3.2.1.4 Provincial Government

In terms of the Constitution of South Africa and the NLTA, the provincial sphere of government's land transport responsibilities include:

[3] Transnet Pipelines pumps and manages the storage of petroleum and gas products through its network of high-pressure, long distance pipelines (Transnet, 2017).

- Provincial transport policy and strategy;
- Planning, co-ordination and facilitation of land transport functions in the province, and preparing the PLTF;
- Co-ordination between municipalities with a view to ensuring the effective and efficient execution of land transport in the province;
- Developing the capacity of municipalities to perform their land transport functions;
- Provincial roads and traffic management; and
- Transport regulation.

In the Western Cape Government (WCG), the DTPW is primarily responsible for performing these provincial land transport responsibilities, including those related to freight.

Provincial freight planning responsibilities are the responsibility of Programme 1, and specifically the Chief Directorate: Policy and Strategy Integration.

Programme 4 (Chief Directorate: Transport Operations) is responsible for the Department's freight operational and management functions.

Programme 5 has responsibilities for both transport regulation (Chief Directorate: Transport Regulation) and transport enforcement (Chief Directorate: Traffic Management), while Programme 3 is responsible for delivering and maintaining transport infrastructure (Chief Directorate: Road Network Management).

This allocation of responsibilities is illustrated in the Figure 3-2 below.

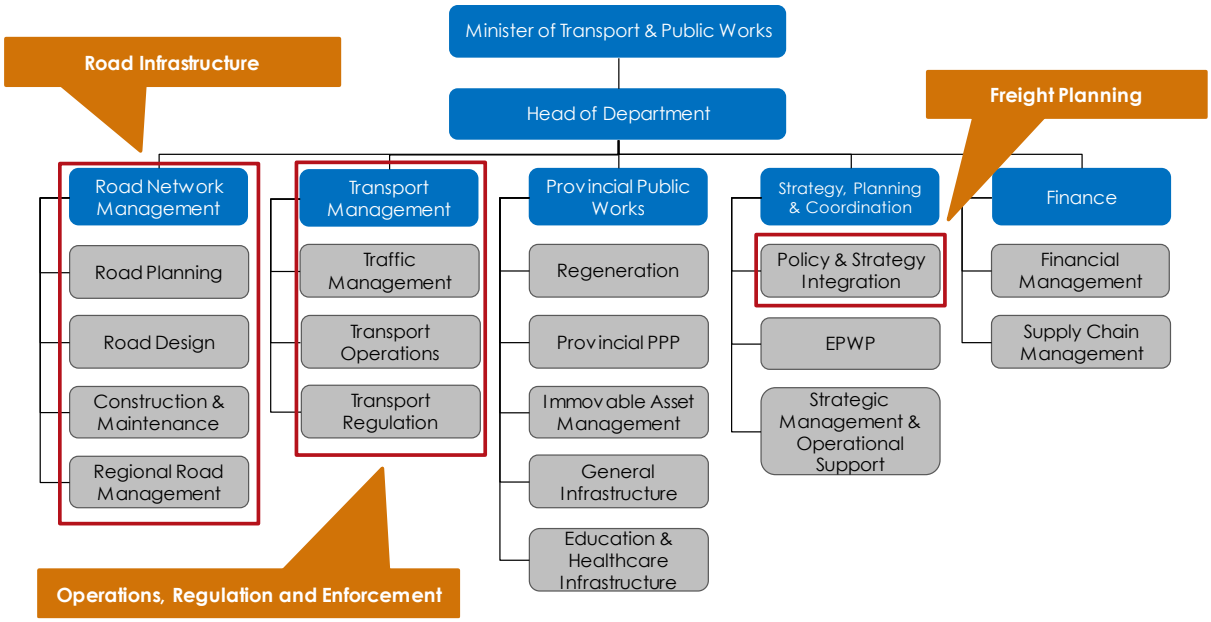

Figure 3-2: Western Cape DTPW functional structure

Other Departments within the Western Cape Government also have roles or interests in the freight sector as noted below:

- **The Department of Environmental Affairs and Development Planning (DEA&DP)**: is responsible for developing the Provincial Spatial Development Framework

(PSDF) and overseeing spatial planning and land-use management at the local level. In addition, DEA&DP is responsible for environmental policy and waste management, both which have an influence on certain freight delivery initiatives. Alignment with this Department is critical to ensuring improved freight outcomes. The DEA&DP structure is presented in Figure 3-3.

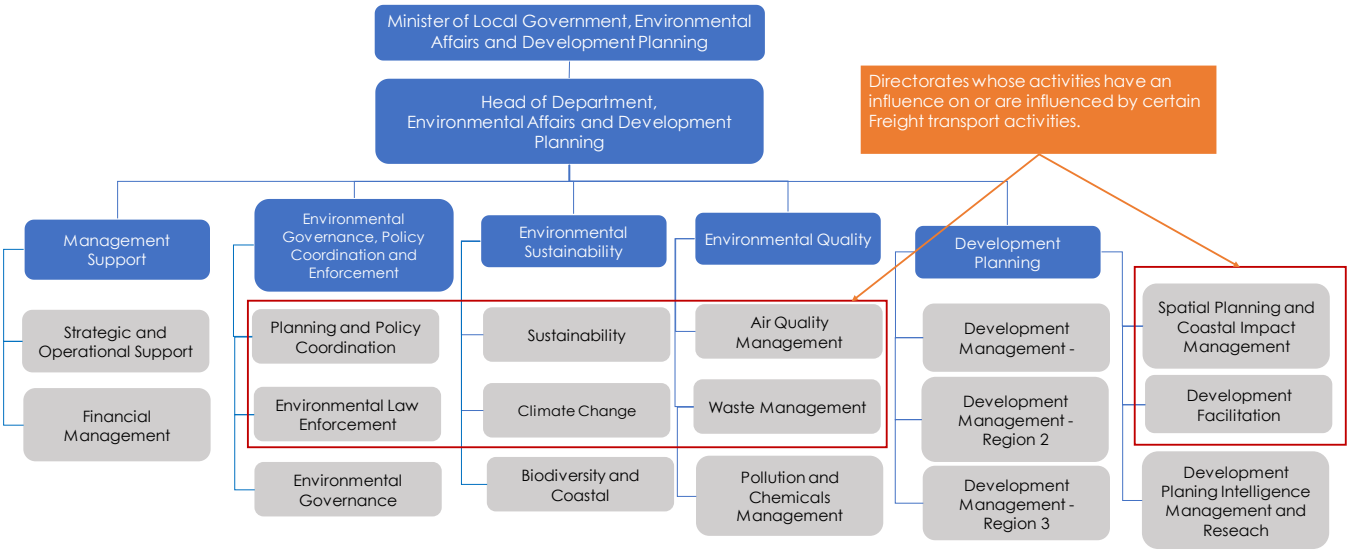

Figure 3-3: Western Cape DEA&DP functional structure

- **The Department of Economic Development and Tourism (DEDAT):** is responsible for economic planning and promotion for the Western Cape. The location, character and timing of economic development has an impact on freight transport and, therefore, alignment with this Department is required. The DEDAT functional structure is presented in Figure 3-4.

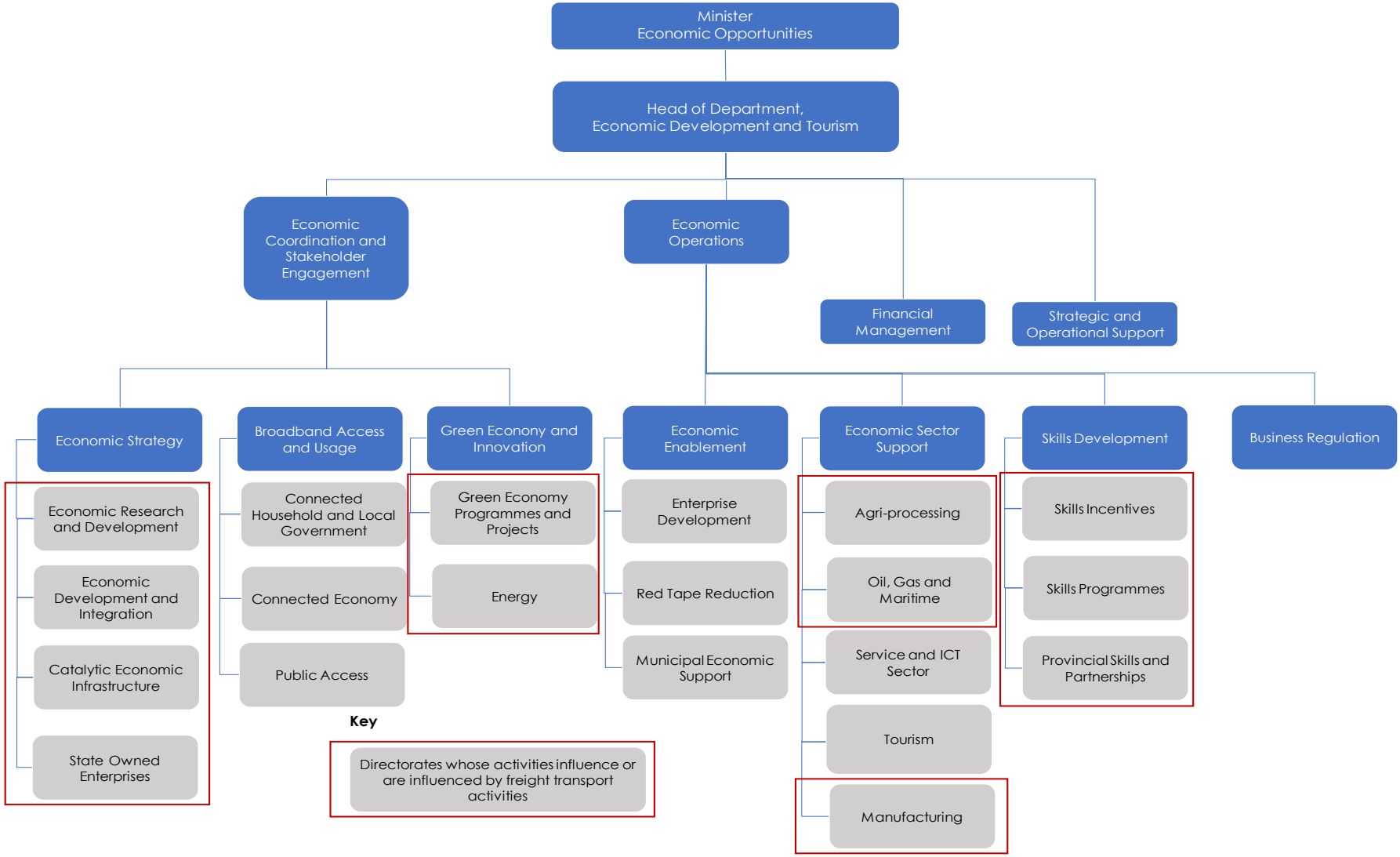

Figure 3-4: Western Cape DEDAT functional structure

The allocation of freight responsibilities within the Western Cape Government is summarised in the Table 3-1 below.

Table 3-1: Freight responsibilities in the Western Cape Government

Department	Programme	Division	Responsibility
DTPW	Programme 1: Administration	Chief Directorate: Policy and Strategy Integration	• Provincial freight policy, strategy and planning
	Programme 3: Transport Infrastructure	Chief Directorate: Road Network Management	• Road infrastructure planning, implementation and management
	Programme 4: Transport Operations	Chief Directorate: Transport Operations	• Provincial freight operations and management
	Programme 5: Transport Regulation	Chief Directorate: Transport Regulation	• Regulation of drivers and vehicles
		Chief Directorate: Traffic Management	• Freight enforcement activities
DEADP			• Provincial spatial planning • Oversight of local spatial planning
DEDAT			• Provincial economic planning and promotion

3.2.1.5 Local Government

The local sphere of government has primary responsibility for land transport in its area of jurisdiction and is the designated planning authority. Responsibilities of the local sphere of government include planning, implementation and management of land transport. Section 11 (c)(vi) of the NLTA stipulates the sphere's responsibility for:

"*managing the movement of persons and goods on land within its area by co-ordinating such movement*"

The local sphere of government also plays a key role in transport law enforcement within its area. Section 11 (c) (xv) of the NLTA stipulates the sphere's responsibility for:

"*liaising on a continuous basis with the South African Police Service (SAPS), Road Traffic Management Corporation (RTMC), the relevant provincial and municipal law enforcement authorities or agencies, and the inspectors appointed under the Cross-*

Border Act, with a view to ensuring co-ordinated transport law enforcement within its area"

The main transport planning instrument at a local level is the Integrated Transport Plan (ITP). The development of ITPs is a legal (NLTA) requirement for District and Local Municipalities. ITPs must be aligned with the Provincial Land Transport Framework (PLTF). At the local level, ITPs are developed as an input to the more general, development-focussed Integrated Development Plans (IDPs).

In addition, Section 37(1) of the NLTA requires that planning authorities must develop a freight transport strategy covering the transport of goods to, from and through the area by road, taking into account:

a) the movement of goods to, from, and through the area by rail or pipeline; and

b) the movement of goods to and from ports or airports.

3.2.1.6 Private Sector

The private sector has a significant role in the freight sector. Private freight companies (road hauliers) provide road freight services to the market, competing for market share with the rail freight business of Transnet.

The activities of this sector are vital to South Africa's economy, but significant externalities are also generated as a result (described in Section 3.4.1.2).

Also, private sector companies are responsible for most of the demand for freight transport and certain choices that they make e.g. use of certain modes, have an impact on freight outcomes in the Western Cape. Private sector companies perform functions over most parts of the freight transport value chain and their activities have a considerable impact on freight transport in South Africa and the Western Cape.

A more effective freight system will, therefore, depend on aligned action and cooperation with the private sector.

3.2.2 Stakeholder Coordination

Given the range of stakeholders involved in the freight sector and the fragmentation of mandates across institutions, effective stakeholder coordination is imperative to achieving positive freight outcomes. As per its NLTA mandate, the Western Cape Government is chiefly responsible for coordination between the relevant stakeholders that play a role in freight in the province.

This section describes the coordination structures that exist and identifies gaps that should be addressed going forward.

3.2.2.1 Departmental (DTPW) Coordination

General departmental coordination occurs through regular Top Management meetings (weekly), the development of a five-year Strategic Plan [4] and an Annual

[4] The current version of the DTPW Strategic Plan covers the period 2014 – 2019.

Performance Plan (APP), as well as through the ongoing coordinating activities of departmental leadership, including the HOD and her immediate subordinates.

From a freight transport perspective, there is a clear need for stronger coordination across the Department. For example, road freight operations directly impact the work that Roads Network Management does in planning and managing provincial road infrastructure, which calls for closer cooperation between Transport Operations and Roads Network Management.

Integrated freight planning and coordination across the Department currently occurs on an ad-hoc basis and is not guided by a specific and aligned Department-wide approach to freight. The development of this Strategy and Implementation Programme is intended to, in part, address this issue.

3.2.2.2 Coordination across the Western Cape Government

There is a need for effective coordination on freight issues across the Western Cape Government (WCG). Functions such as Spatial Planning and Land-use Management (the responsibility of DEA&DP) are strongly linked to transport in general, including freight transport. As an example, modal rebalancing could be supported by the densification of certain industrial areas to improve the viability of rail branch lines, which could, in turn, lead to a greater share of freight being moved by rail and support the growth in domestic intermodal [5] freight.

The Western Cape Infrastructure Framework (WCIF) 2013, noted that provincial Spatial Planning is currently done separately from planning in related sectors, such as infrastructure and transport, and these different planning processes are not aligned. For example, the development and review of the PSDF, the PLTF and the WCIF does not occur in an integrated or aligned fashion. The WCIF makes recommendation for the PSDF and the PLTF to be developed and reviewed concurrently, where possible.

In addition, aligning infrastructure, transport and Spatial Planning, and the associated prioritisation of investment and on the ground delivery, is identified as one of the key needs in the Provincial Spatial Development Framework (PSDF). This approach is in alignment with a key strategy of the National Land Transport Strategic Framework (NLTSF): to encourage efficient land and transport planning to enable better decision-making and positive outcomes. The NLTSF requires that land-use and transport planning be consistent with the SIP7 programme ensuring that transport planning becomes a key contributor and is considered within the broader planning and development environment at all tiers of government.

3.2.2.2.1 Western Cape Government Freight Planning Coordination

Coordination across the Western Cape Government occurs through Provincial Cabinet, Provincial Top Management and a range of transversal coordination

[5] Characteristic of a transport system that allows at least two different modes to be used in an integrated manner in a 'door-to-door' transport chain and that it is a quality indicator of the level of integration between different transport modes (European Commission, 1997).

structures established to monitor progress towards achieving the Provincial Strategic Goals (PSGs).

Where coordination does occur, it is generally focussed on project-specific issues, such as the recent development of a Regional Spatial Development Framework for the Cape Metro Functional Regional. This coordination does not necessarily lead to ongoing, structured engagement through which cohesive strategy can be developed or implemented.

3.2.2.3 External Stakeholder [6] Coordination

3.2.2.3.1 Forums led by the Western Cape Government

Between 2009 and 2014 the DTPW operated an Integrated Transport Steering Committee (ITSG). At the same time, three Corridor Work Groups (subordinate to the ITSG) were established, one for each major transport corridor (N1, N2 and N7) in the Western Cape. These fora were established with the purpose of integrating and coordinating transport (including freight transport) across the Western Cape and the members included relevant provincial, municipal, and industry stakeholder representatives. These structures were guided by the goals and objectives set in the PLTF. For freight, there was a specific focus on increasing the mode share of rail relative to road in the Western Cape.

In the aftermath of the 2014 national and provincial elections, it was decided that the provincial transversal management structures (i.e. stakeholder engagement and coordination structures) would be rationalised and the ITSG and Corridor Working Groups ceased to operate. Newly established, multi-sector engagement structures were established and structured around achieving the Provincial Strategic Goals (PSGs) and implementing the provincial Game Changer initiatives. A Transport Economics Workgroup was included under PSG1 and was mandated with coordinating, institutionalising, planning, implementing and reporting of transport matters across all stakeholders and between municipalities. The Transport Economics Workgroup's strategic discussions include freight initiatives particularly road to rail mode shift and the development of a Provincial Freight Strategy.

After several years of operation, this approach is now being revisited and the draft Provincial Land Transport Framework (PLTF, (2016/17 – 2020/21)) includes fresh proposals to establish appropriate forums (including a Provincial Transport Management Forum (PTMF)) to facilitate enhanced integration and coordination on transport matters, including freight transport.

Transnet, SANRAL and the private sector are three of the major external stakeholders in the freight sector in the Western Cape. However, coordination between the WCG and these groups is currently limited.

[6] External stakeholders are parties outside the DTPW who have an interest, are affected by or whose activities affect freight transport delivery in the Western Cape.

Since the dismantling of the ITSG, there have been no formal, provincial-level coordinating platforms between the Western Cape Government, Transnet, SANRAL and the private sector. As a result, the ability of the Western Cape Government to coordinate with these stakeholders in a way that supports improved freight outcomes is limited.

A Working Group between the DTPW and Transnet is being re-established and, through it, provincial transport issues that involve Transnet will be discussed. However, the Working Group does not have a clear mandate, and has had limited success thus far. Its activities are also hindered by the limited specialist freight and rail capacity within the DTPW.

The Western Cape Government does have a legal mandate to coordinate between these stakeholders to support the achievement of provincial freight strategy, policy and planning. While it cannot compel stakeholders to implement certain initiatives (such as tolling on national roads), it can work with these stakeholders to develop and implement an aligned strategy supported by all stakeholders. A recognition of the need for such of a strategy is one of the reasons for the development of the Freight Strategy.

Going forward, the establishment of appropriate coordination structures between these stakeholders will be imperative.

3.2.2.3.2 Forums led by the City of Cape Town

In 2014, the City of Cape Town (CoCT) established a Land Transport Advisory Board (LTAB) and an Intermodal Planning Committee (IPC) in which the DTPW is an active participant (see Figure 3-5 below). The IPC and its seven subcommittees (including one for rail, port and the functional region) provide a platform for integration and coordination between the Department, the City and other stakeholders. Local municipalities represented in these structures are Stellenbosch, Overstrand, Theewaterskloof, Swartland, Drakenstein and Saldanha Bay. In addition, both PRASA and Transnet are part of these fora. National Government does not have core representation in the LTAB or IPC, although representatives from the DoT can be invited to attend meetings as required.

The existence of the LTAB and the IPC are important for the coordination of transport in the City of Cape Town and the broader functional region. However, these structures are, by their nature, focussed on CoCT, and do not supersede the need for coordinating structures at a provincial level. The PLTF (2016/17 – 2020/21) includes a recommendation for the DTPW to explore the option of expanding the mandate of the IPC to cover the entire Western Cape, considering that the Cape Town metro

areas under its jurisdiction have the largest percentage of transport volume. If this option is feasible, the IPC with expanded mandates will then replace the PTMF.

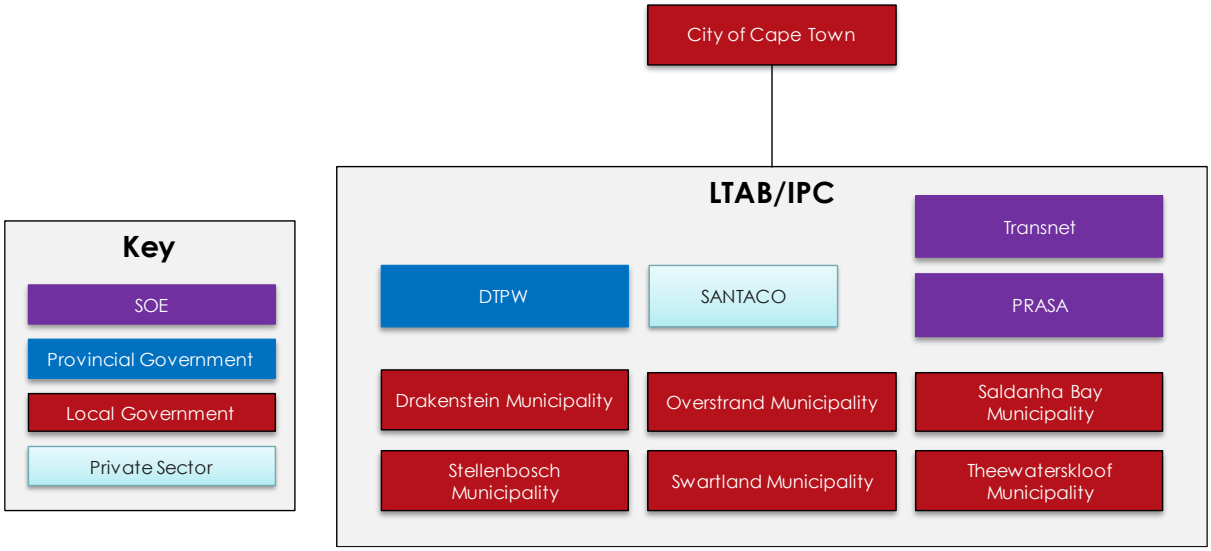

Figure 3-5: Membership of the LTAB / IPC

3.2.3 State of Transport Planning and Coordination

Freight transport planning and coordination in the Western Cape is affected by fragmented institutional arrangements, poor coordination, and limited capacity within government.

The National Transport Masterplan (NATMAP 2050) noted that transport functions are operated and regulated by different government agencies and private operators, at all three spheres of government. Generally, there is little coordination amongst key stakeholders, which means each entity tries to improve those elements under its jurisdiction with little consideration of the efficiency and effectiveness of the overall systems. This has also resulted in the exclusion of alternatives or modal system options that do not have institutional sponsors. NATMAP recognises a need to minimise overlaps by establishing cost-effective and homogenous institutions to support the emergence of improved transport systems.

The analysis in the NATMAP applies to the Western Cape and highlights the importance of improved coordination between stakeholders.

There are several reasons for the poor state of planning and coordination for freight in the Western Cape, including:

- A lack of formal platforms for joint planning and strategic alignment;
- Misaligned planning cycles within and between different stakeholders;
- The fact that planning continues to occur in silos, despite efforts to align provincial and local planning, through the development of the PLTF and ITPs.

A significant contributor to the current situation is limited capacity across three spheres of government. The Western Cape Government has very limited freight expertise and this has undermined its ability to effectively coordinate with internal and external stakeholders. Where the WCG does have capacity, such as in roads development and traffic enforcement, these are not effectively incorporated into an integrated approach to freight.

At a local level, the City of Cape Town has some freight planning capacity and has developed a Freight Management Strategy. Outside of the Metro, District and Local Municipalities have limited capacity to perform their land transport functions, including freight. It should be noted that the Cape Winelands District Municipality has developed a District Freight Strategy.

The Western Cape Government, through Programme 1 of the DTPW, has provided all 29 municipalities (5 District Municipalities and 24 Local Municipalities) in the province with transport planning assistance through the development and updating of ITPs. However, the DTPW's ability to provide adequate technical advisory and support to local authorities is limited by its own lack of capacity.

The Western Cape Government's Department of Local Government (DoLG) has the primary role for developing capacity at local level through the Municipal Support and Capacity Building Directorate. Technical skills have been identified as a key gap, including:

- Engineering;
- Planning; and
- Financial and project management.

Initiatives that are currently in place to improve capacity are:

- Targeted and integrated capacity building initiatives;
- Support to Municipalities with enhancement of ICT; and
- Municipal training programmes.

As with the DTPW, the DoLG also faces human capacity shortages to adequately implement capacity building programmes for local municipalities. Engineering has been identified as the main skills category where shortages exist.

In addition to the above, the NLTA requires the Western Cape Government, and the DTPW in particular, to develop the capacity of local authorities to perform their land transport functions. In line with this mandate, the DTPW developed a Provincial Sustainable Transport Programme (PSTP), formerly Provincial Public Transport Institutional Framework (PPTIF), which provides recommendations that address some of the challenges related to inadequate institutional capacity within local municipalities. The PSTP proposes that the DTPW actively drive the delivery of improved local transport systems in partnership with local municipalities. Over time, the DTPW will work to build the capacity of local authorities to perform their land transport functions, including freight.

3.2.4 Freight Skills Development

Development of competencies and appropriate skills in the freight transport sector is important for improving freight delivery in the Western Cape. Improved skills help to reduce the risks posed by behavioural issues such as bad driving. This improves safety for other road users, reduces accidental damage to infrastructure and leads to lower cost of law enforcement. Skills development in the freight transport sector is aligned with Provincial Strategic Goal 1 (PSG1), which aims to create opportunities for growth and jobs. It also aligns with the DTPW Programme 1 Strategic Objective, which aims to improve capacity in the transport, built environment and engineering disciplines by providing a continuous flow of young professionals through Professional Development Programmes (PDPs).

The Western Cape has a Provincial Skills Development Forum that was set up to address skills needs in the Province. The Provincial Skills Development Forum falls under the mandates of DEDAT. Engagement with representatives of the DEDAT's Provincial Skills Coordination (PSC) sub-programme highlighted that the current focus on skills development in the Western Cape is on driving apprenticeships in the three growth sectors of Oil and Gas, Tourism and Agro-processing and the enabling sectors of ICT/Broadband and Energy. No specific mention of transport or freight skills was found while compiling the status quo.

However, the PSC noted that there are opportunities to pursue freight skills development through Skills Education Training Authorities (SETAs). The Transport Education Training Authority (TETA) has several subsectors that are relevant to freight, namely Freight Handling, Maritime, Rail and Road Freight (which includes Waste Management). TETA works with industry to implement appropriate skills development intervention programmes in these sub-sectors, receiving support and partial grant funding from National Government.

TETA prepares an annual Sector Skills Plan, which identifies skills that are scarce in the transport sector. The 2016/2017 plan notes that skills in the sector are sometimes overlooked in skills development forums as these skills are not classified as critical under the commonly used definitions of critical skills. Coordination with TETA in the Western Cape is, therefore, required to highlight freight skills needs and when developing interventions to improve freight skills.

Other skills development programmes available in the Western Cape include the Masakh'iSizwe Bursary Programme, which aims to address skills shortages by improving capacity in the transport, built environment and engineering discipline. However, there are few transport-related bursaries for this programme. Only 1 out of 246 or 0.4% of bursaries awarded in 2014 were for transport studies. The bursary programme also has a greater focus on professionals such as transport economists and engineers, with little support provided for the development of operational skills.

The freight industry has ongoing skills development initiatives, given the productivity gains and reduced risks that come from having competent personnel. Certain large freight transport operators, Transnet for example, are accredited training providers.

These operators offer skills development programmes for their own employees and for employees of other companies. The Western Cape Government could consider leveraging existing industry led programmes to support skills development in the freight sector, where appropriate. Since most of the freight sector entities with existing skills development programmes are members of TETA, coordination can occur through existing TETA structures.

3.2.4.1 Implications for Strategy Formulation

Planning, coordination and functional institutions form the foundation of effective freight transport systems. Therefore, improving these capabilities within the key government stakeholders is a key step towards improving overall freight transport delivery. Specific needs identified in this chapter include:

- Stronger alignment between provincial spatial, transport and infrastructure planning, with freight issues being duly considered in these processes
- Improved coordination of freight transport in the Western Cape at all levels:
    - Within the DTPW;
    - Within the Western Cape Government; and
    - With external stakeholders (national government, local government, state-owned entities, the private sector)
- Development of capacity at provincial and local level to plan, coordinate and manage freight.

The Freight Strategy includes initiatives to address these needs in the Western Cape.

3.3 Status quo of Western Cape Freight Transport Demand and Demand Management

3.3.1 Western Cape Freight Demand

According to the Western Cape Freight Demand Model (FDM) developed concurrently with this Freight Strategy, a total of 139.1 million tonnes of freight either originated from or was destined for the Western Cape in 2016, representing 16.3% of all freight in South Africa. The Sishen-Saldana export iron ore line contributed 35.4% of this volume.

Also, the FDM output shows that the Western Cape has the highest average travel distance (ATD) for freight in South Africa as presented in Figure 3-6. The high ATD for freight to and from the Western Cape is a key factor in high logistics costs for the province.

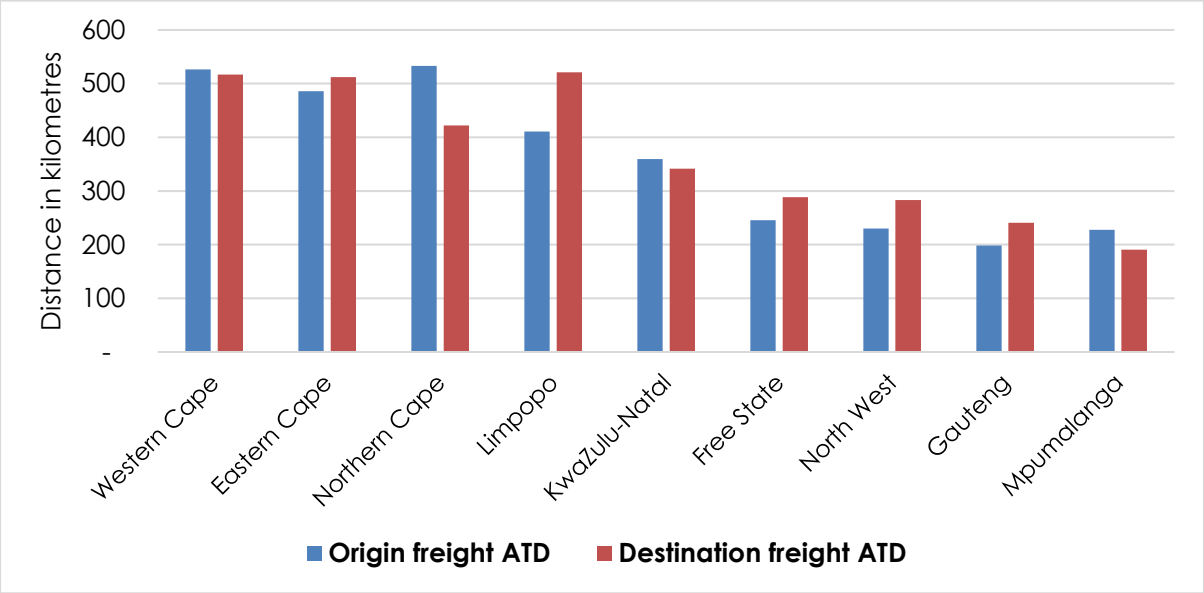

Figure 3-6: Average freight travel distances for South Africa in 2016

The breakdown of interprovincial freight transported to and from the Western Cape for 2016 is presented in Figure 3-7. Most freight to the Western Cape originated from Kwazulu-Natal. Most outbound Western Cape freight was destined for Gauteng.

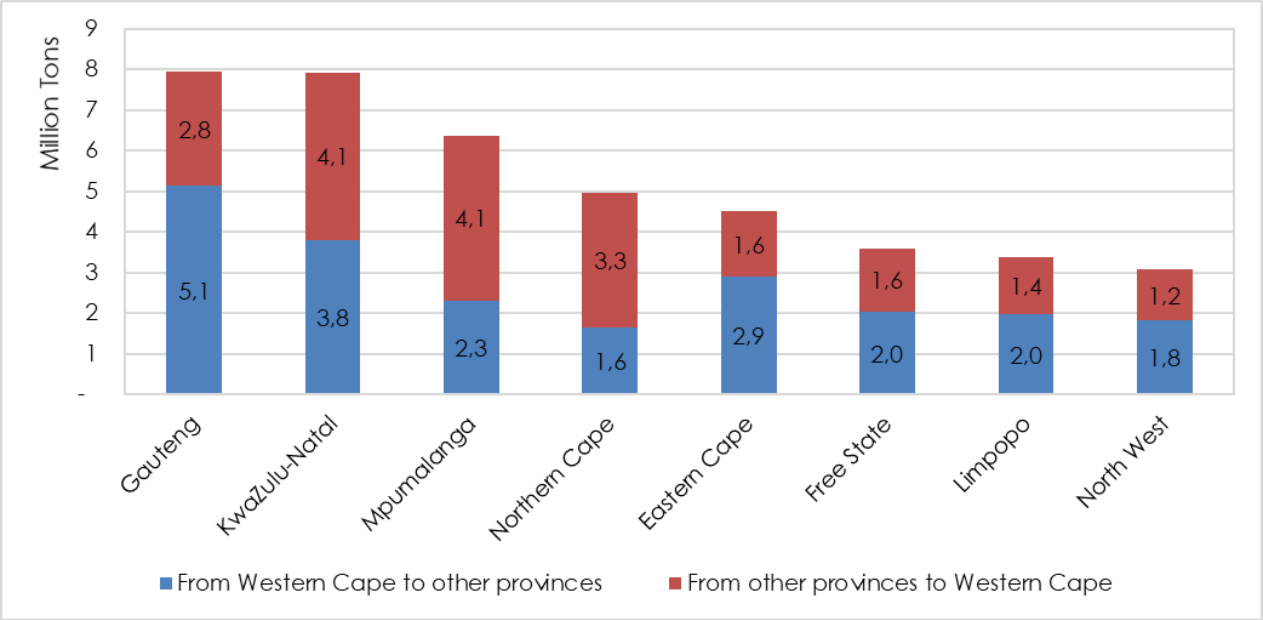

Figure 3-7: Western Cape interprovincial freight flows in 2016

The main industries that contribute to freight movement in the Western Cape are:

- Agriculture;
- Manufacturing; and
- Mining (predominantly the Sishen to Saldanha export iron ore line).

The breakdown of interprovince and intraprovince freight by industry is presented in Figure 3-8.

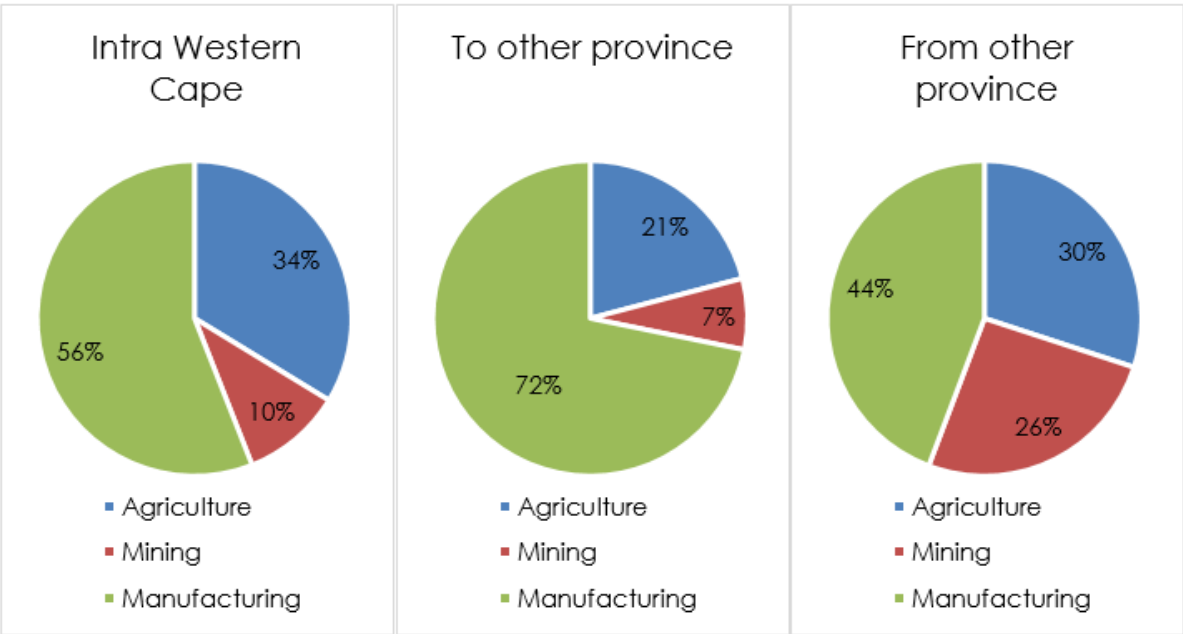

Figure 3-8: Western Cape freight breakdown in 2016

The manufacturing sector contributes to most freight demand to and from the Western Cape and within the province.

The Western Cape manufacturing sector is, however, made up of a large agro-processing component as presented in Figure 3-9. This highlights the importance of the agriculture sector to the provincial economy.

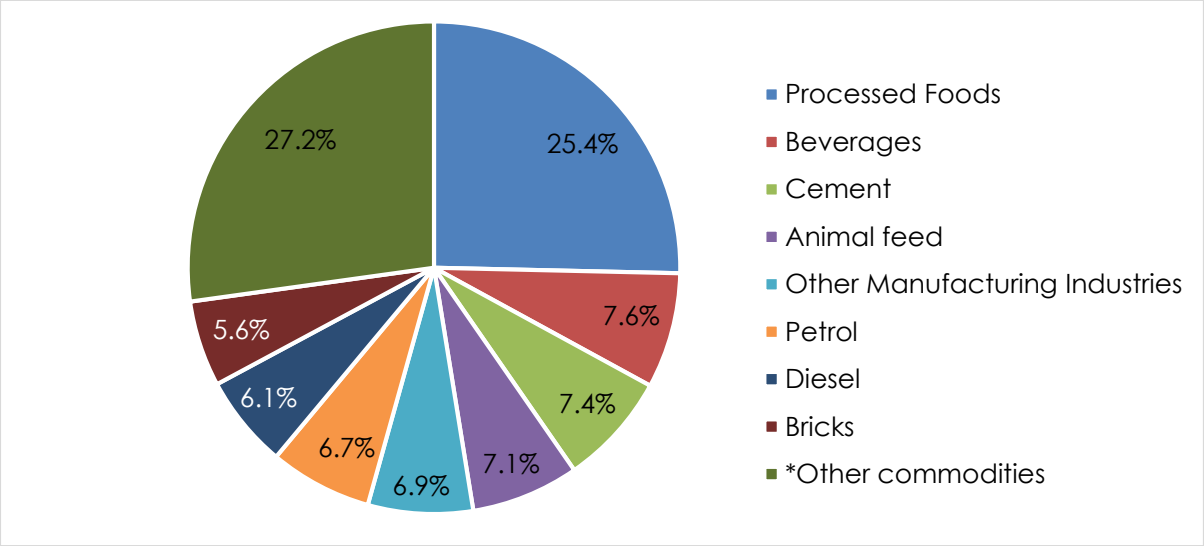

Figure 3-9: Western Cape manufacturing output in 2016 [7]

The Western Cape freight demand is high in comparison with the contribution of the provincial economy to South Africa's GDP. In 2016, the Western Cape province contributed an estimated 13.7% to South Africa's GDP. This was less than the province's 16.3% contribution to national freight demand, measured in tonnes of freight transported. The Western Cape's high freight demand translates to comparatively high logistics costs for the province. Logistics costs refer to all costs incurred in the movement of goods and include a range of components such as transport costs, warehousing costs, inventory carrying costs, administration and order processing costs. These costs are discussed in greater detail in Section 3.4.1.2.1. An FDM [8] developed concurrently with this Strategy showed that in 2016, the Western Cape's logistics costs made up 16.5% of South Africa's logistics costs. The long distances of the Western Cape from trading partners in the country is a major factor in the high freight demand and high logistics costs. As a result, freight demand management requires attention to maintain or improve the Western Cape's economic competitiveness. In addition, freight demand management is necessary in mitigating the negative environmental and social impacts of freight transport. Such

[7] Other commodities consists of Iron and Steel (5.3%), Fertilizer (3.2%), Wood timber and products (2.9%), Other Petroleum Products (2.9%), Metal products, machinery and electronic equipment (1.7%), Slaughtered animal meat (1.5%), Chemicals (1.4%), Textile Products (1.3%), Gas (1.2%), Paper (1.2%), Scrap metals (1%), Soya bean products (0.8%), Pharmaceutical Products (0.8%), Non-Ferrous Metal Products (0.7%), Recycled paper (0.5%), Printing and Publishing (0.5%), Motor Vehicle Parts & Accessories (0.1%), Transport Equipment (0.1%), Jet fuel (0.1%), Pulp of wood and paper (0.02%) and Tobacco Products (0.01%).

[8] A report on the main findings of the FDM was issued together with this Strategy and should be referred to for details of the logistics costs calculations and methodologies.

negative impacts are discussed in greater detail in Section 3.4.1.2, with greater emphasis on the impacts of road freight transport.

3.3.1.1 Freight Demand Management Options

Several initiatives have been identified that offer the potential for managing demand for freight in the Western Cape. Key areas that have been identified include:

- Increasing the share of regional production, value-addition and beneficiation;
- Improving resources productivity by using fewer materials per unit of consumption in the economy. This reduces the quantity of materials moved to production facilities per unit of consumption;
- Waste minimisation;
- Substituting transfer of information for transport of physical products, where possible; and
- Improving productivity of the freight sector e.g. increasing freight vehicle load factors. This may not necessarily reduce the quantity of goods moved, but reduces total number of vehicles used, which has positive benefits.

It is noted that most of the freight demand management options listed above will require coordinated action between multiple stakeholders across several sectors to be effective. As an example, waste minimisation falls under the mandate of DEA&DP and can impact or be impacted by economic decisions that are under the mandate of DEDAT. In many cases transport policy makers have limited influence on these departments and related sectors. Therefore, strong coordination and a common vision amongst these stakeholders will be critical to achieve progress towards managing freight demand.

3.3.1.1.1 Local and International Demand Management Trends

One of the main desired outcomes of freight demand management is the decoupling of freight transport demand and economic growth. Decoupling offers the prospect of growing economies without a corresponding increase in freight-related externalities. Efforts to decouple freight transport and economic growth have not been directly at the fore of policy agendas in South Africa. This has also been the case globally until recently. As examples, in the European context, evidence that freight transport demand issues are starting to inform policy both at the national and regional scale only appears in the early 2000's (Tight, Delle Site, & Meyer-Rühle, 2004), while initial exploratory studies from New Zealand (Ballingall, Steel, & Briggs, 2003) concluded that decoupling was relatively unfamiliar territory in Australasia.

3.3.1.1.2 Western Cape Initiatives that Impact Freight Demand Management

Local Value Addition and Beneficiation

In the agriculture sector, value addition entails changing a raw agricultural product into something new through packaging, processing, cooling, drying, extracting or any other type of process that differentiates the product from the original raw commodity.

Beneficiation generally applies to extractive sectors such as mining and refers to the transformation of a primary material (produced by mining and extraction processes) to a more finished product.

In most cases, the motivation for both value addition and beneficiation is primarily the need to increase the economic value of raw commodities (produce and minerals) to improve the commodities' contribution to the local economy. In addition, jobs are created in the value addition and beneficiation sectors.

Local value addition and beneficiation offer freight transport demand management benefits and can lead to a reduction in demand of certain types of freight movement. In general, the transported volumes of raw materials are larger than those of corresponding finished products. As an example, a tonne of mined rock (ore) is processed to yield only a few grams of valuable mineral. As a result, when raw materials are processed locally, the demand for long distance transport for such materials is reduced. The freight demand in tonne-km of materials transported from certain regions decreases, which can result in freight transport cost reduction and less damage to road infrastructure. However, an increase in local freight transport demand may occur due to movement of raw materials to the production facilities. This can lead to negative impacts such as localised congestion and pollution, which must be taken into consideration in determining the overall freight transport related benefit from local value addition and beneficiation.

In the Western Cape, a few local value addition promotion initiatives exist, which may have a positive impact on freight transport demand in the province. However, existing initiatives are not necessarily influenced by the freight transport agenda. Rather, the initiatives are primarily informed by economic development priorities to increase output in high-potential regions. Freight transport demand reduction benefits are, in this case, a positive externality.

Examples of such initiatives include programmes run through the Western Cape Fine Foods Initiative (WCFFI), which provides support for local agro-processing. WCFFI is a Non-Profit Company (NPC) in partnership with national and provincial government entities, including the WCG. The Western Cape Government has also initiated Project Khulisa which includes initiatives for promoting the development of the local agro-processing industry. However, initiatives such as these fall under the mandate of the WCG's Department of Economic Development and Tourism (DEDAT) and the DTPW currently has a limited role in ensuring that freight concerns are appropriately incorporated. As a result, the need for greater coordination between DTPW and DEDAT is clear.

Since current local value addition initiatives are primarily driven from an economic development perspective, there has not been much work done to quantify the potential benefits that such initiatives may have on the demand for freight transport and its externalities in the Western Cape. Therefore, an investigation to quantify these benefits is necessary to enhance the ability of the DTPW and other actors to appropriately incorporate freight concerns in these initiatives. A provincial Freight

Demand Model (FDM), which will be developed as part of the Freight Strategy, will include the development of beneficiation scenarios that lay the foundation for such work.

Solid Waste Minimisation

Population growth and increasing economic activity can lead to increases in solid waste generation in an economy. Solid waste contributes to freight transport demand when it is collected and moved to disposal facilities or other waste management facilities i.e. transfer stations, material recovery facilities, drop-off centres or treatment facilities. In the absence of measures for managing waste generation, increases in solid waste freight transport demand result in high solid waste management costs. Most solid waste in the Western Cape is transported by road. High solid waste freight demand therefore contributes to negative road transport impacts such as noise, air pollution and road damage.

In the Western Cape, solid waste management cost has increased over the past few years. The reasons for the increases include:

- The need to meet stringent targets for waste minimisation and alternatives to landfill imposed by the Waste Act (No. 59 of 2008) and the National Waste Management Strategy (NWMS); and
- The shortage of well-located, vacant land available for new landfills. This contributes toward rising waste transport costs due to increasingly distant landfill locations.

Transport is among the largest components of solid waste management cost. The 2011 Local Government Budgets and Expenditure Review quotes an estimate that transport makes up around 45% of total waste disposal costs. During engagements with the DEA&DP, it was indicated that the logistics component of waste disposal costs in the Western Cape can be as much as 80%, which necessitates high priority of waste reduction and logistics interventions.

A reduction in waste generated in the Western Cape will have positive impacts, including a reduction in freight demand and related direct and externality costs.

Waste minimisation best practices typically include initiatives that promote waste reduction at all stages of the goods production and service provision process. These initiatives can also lead to a reduction in raw materials used, which further reduces demand for freight transport. Increasingly, waste reduction at the point of consumption is receiving attention, which also contributes to the reduction in the consumption of materials and consequently to the overall transport demand.

Waste reduction initiatives in the Western Cape are within the primary domain of the DEA&DP through the implementation of Integrated Waste Management Plans (IWMP). As such, coordination between DEA&DP and the DTPW is essential in aligning transport related aspects of waste management with service delivery and sustainability considerations.

Western Cape Province Solid Waste Minimisation Initiatives

Several waste minimisation initiatives exist in the Western Cape, including private sector-initiated recycling programmes. However, despite the existence of these useful initiatives, the total fraction of the solid waste stream diverted from landfill is still low (Western Cape Department of Transport and Public Works, 2013). The DEA&DP estimates that about 20% of all solid waste is currently diverted in the Western Cape. The 2017 GreenCape Market Intelligence Report, however, noted that the estimated percentage of solid waste that can be recycled is as much as 65%, meaning there is room to increase the amount of solid waste that can be diverted from landfill and recycled. According to the Western Cape IWMP, 2017, some municipalities have implemented separation at source programmes, while others are still conducting recycling pilot projects. Separation at source can reduce transport demand for waste to landfill facilities.

Waste Minimisation Challenges

Greater promotion of recycling, including the provision of additional incentives, would be necessary to increase the volume of waste that is diverted from landfill. Policy tools for increasing recycling are typically the DEA&DP's responsibility and the DTPW has no direct influence on such policy.

Development and implementation of such policies may also be impacted by external factors. As an example, commodity prices have an influence on the attractiveness of recycling activities. If prices of certain commodities are low, substituting such commodities with recycled materials may be less attractive from a cost perspective, if recycled materials are more expensive than virgin materials. This could, however, be mitigated by developing policy that incentivise activities such as recycling, making recycled materials competitive and more attractive to industry.

High cost of necessary infrastructure has also contributed to the slow adoption of recycling. Increased recycling requires more material recovery facilities for which capital may not be available, especially in small municipal region.

Another challenge that exists in the solid waste sector in the Western Cape is the lack of adequate information about solid waste volumes and composition. Such information is useful for understanding demand for waste handling services, including transport and infrastructure. The Western Cape IWMP, 2017, notes that over the period 1 April 2015 to 31 March 2016, the majority (64%) of the municipalities did not submit all the required reports for the Integrated Provincial Waste Information System (IPWIS). This resulted from insufficient capacity to complete the manual information collection process. Also, facilities such as weighbridges for taking solid waste specific measurements are generally not available, particularly in smaller municipalities. Only 7 out of 164 landfill sites in the Western Cape had weighbridges as of August 2017. Weighbridge readings are collated to determine the quantity of solid waste moved. This information is input for the solid waste reports. Innovations, such as onboard weighing discussed in Section 3.7, may be considered to improve on this.

In addition, the Western Cape Government does not have sufficient information on agricultural and industrial solid waste, which is primarily generated by the private sector. Coordination between DEA&DP and business is necessary to facilitate the collection of such information.

The lack of solid waste information and data has a negative effect on the ability to make sound planning decisions, including those regarding solid waste transport provision.

3.3.1.1.3 Freight Industry Productivity

Some early ground can be made in the promotion of productivity and efficiency in the freight transport industry, especially with regards to road freight. While this may not lead to a reduction in the total volume of freight moved, it may, for example, lead to a reduction in the number of freight vehicles on the road. This could include improvement of vehicle load factors or the use of technology that enables transporters to easily secure return loads. Other productivity initiatives include logistics clustering, the geographical concentration on logistics activities, which makes transportation and logistics operations more efficient and is related to improved spatial planning. Although the road freight industry has done considerable work to improve productivity due to the competitive nature of the industry, considerable gains in productivity could still be achieved by expanding productivity initiatives in the sector.

The Western Cape is considering the implementation of Performance-Based Standards (PBS). Under PBS, more productive, specialised heavy vehicles known as smart trucks may be licenced to operate in the province. The motivations for smart trucks include the likely reduction in the number of heavy vehicles on the roads and the corresponding reduction in negative impacts such as congestion and pollution. PBS are discussed in greater detail in Section 3.6.

3.3.2 Implications for Strategy Formulation

Freight transport demand management initiatives present opportunities to improve freight transport delivery and sustainability; however, their implementation usually occurs over the long term. The thinking in this space is relatively new and has only recently started to inform policy, even in developed economies. Despite the long timeframes associated with these initiatives, the Strategy should incorporate improved freight demand management approaches into areas such as transport, spatial and economic planning going forward.

It is also worth considering that freight transport demand reduction per unit of economic output may occur through the process of economic transition. Freight transport demand reduction could occur as a result of the growth in the services sector of an economy. As economies become more information based and more resource-efficient, it is possible that growth in demand for movement of physical goods will slow compared to economic growth, which will lead to freight transport demand reduction per unit of economic output.

Defining suitable metrics for measuring and monitoring freight transport intensity in the Western Cape is another action that can be considered in the Strategy. Such a metric is an important input to decision making, and monitoring progress toward intensity reduction. A National Logistics Barometer is published annually by the University of Stellenbosch, which may serve as an example of what the Western Cape Government should consider going forward.

An important observation is that the freight demand management opportunities identified in this chapter generally fall outside of the DTPW's direct influence. Most of the work to promote waste minimisation in the goods and services value chain, or to optimise the location of industrial hubs to reduce movement of raw materials and finished goods, falls under DEDAT and DEA&DP. However, the DTPW can play an active role in providing a transport and freight perspective on these initiatives and coordinating with these stakeholders to achieve aligned goals and objectives.

3.4 Status quo of Western Cape Freight Transport Modal Split and Modal Rebalancing

3.4.1 Western Cape Freight Transport Modal Split

In line with the rest of the country, road freight dominates the land freight transport landscape in the Western Cape. This dominance has occurred at the expense of rail freight, which has seen a significant decline in market share over the last two decades. The historic trend in the rail's market share of freight movement in the Western Cape between 2003 to 2012, the time span for which data was available during the status quo review, is presented in Figure 3-10. The general trend over the period shows a decrease across all three national freight corridors in the Western Cape. Over this period the rail market share was generally below 10% on all national corridors in the Western Cape.

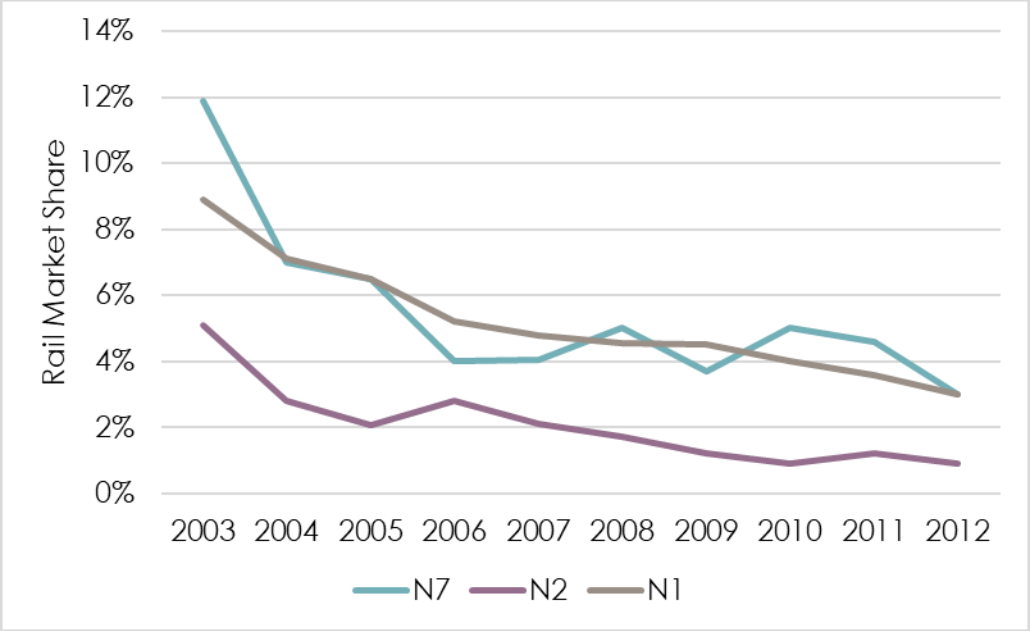

Figure 3-10: Rail market share on the main Western Cape corridors - excluding the export iron ore line
(Havenga J. , Goedhals-Gerber, De Bod, & Simpson, 2015)

According to the 10th State of Logistics Survey for South Africa, at national level, there are indications that the rail declining market share trend is reversing. An increase in the rail market share has been recorded from 2011 to 2013. Over the period, rail market share in terms of tonnage was 11.4%, 11.7% and 12.1% in 2011, 2012 and 2013 respectively. The rail market share in terms of tonnage-km over these three years was 29.5%, 30% and 30.5% respectively. There has been a slight increase on the corridors, and this may indicate the beginning of an upward trend. A slight increase in rural rail freight has been noted. Tonnages transported by rail exceeded historical annual tonnage records for the three consecutive years. The 10th State of Logistics Survey states that part of this growth is a result of reinstatement of previously decommissioned branch lines. The Transnet branch line strategy is discussed in Section 3.5.1.2.3. Also, in 2011 Transnet launched its Market Demand Strategy (MDS), which includes interventions to improve rail infrastructure and lays the foundation to improve the

freight rail service in South Africa. The MDS is discussed in more detail in Section 3.5.1.2.1.

A Freight Demand Model (FDM) developed concurrently with this Strategy confirms the increase in the market share for rail in South Africa between 2011 and 2013 as shown in Figure 3-11. The FDM, however, shows that there was a further decrease in the volume of general freight transported by rail in South Africa and in the Western Cape after 2013. The causes of the decrease in the volume of freight transported by rail after 2013 were yet to be confirmed at the time of completing the Strategy report.

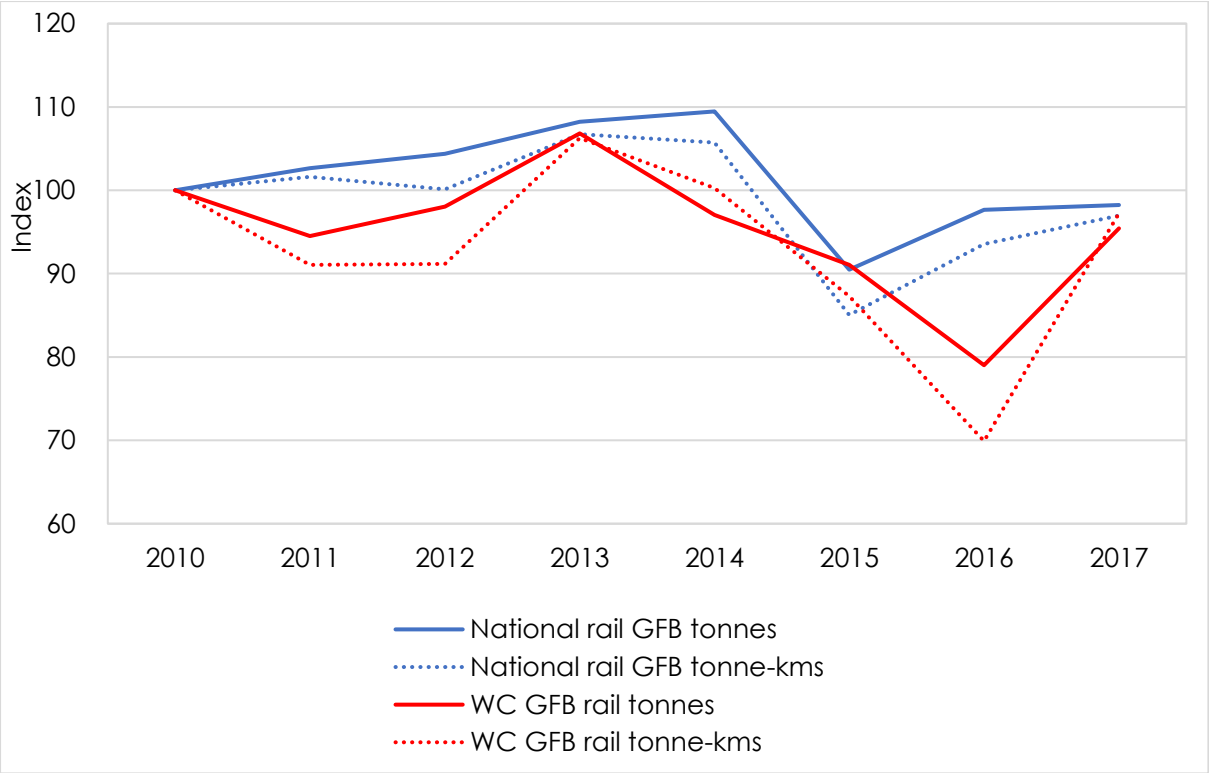

Figure 3-11: Time series of indexed GFB rail tonnes and tonne-kms from 2010 to 2017 (Base year 2010)

The improvement in the general freight transported by rail in the Western Cape between 2016 and 2017 is a result of an increase in maize, iron and steel and barley volumes. This, however, is not permanent demand and the market share may decline in the future. The FDM shows that significant work is still required to improve the market share for rail freight in South Africa and in the Western Cape.

3.4.1.1 Reasons for Low Rail Modal Share

Several reasons have led to the dominance of road freight in South Africa, and in the Western Cape. These are discussed below.

3.4.1.1.1 Road Freight Industry Deregulation

The deregulation of the road freight industry, which occurred in 1988, was a key factor in road freight dominance in South Africa. Deregulation led to the rapid expansion of the road freight industry after 1990 resulting in an over-supply of road freight transport. The oversupply decreased profitability of the sector, forcing road freight operators to become more efficient to survive. Improved productivity, coupled with successful

negotiations with authorities for increased vehicle carrying capacity, placed road freight in a favourable position to compete with long-haul railway services. This meant that transportation of many commodities shifted from rail to road, including goods that were normally regarded as better suited for rail haulage - such as maize, fuel, coal, vehicles, containers, and cement.

Currently, a defining feature of the road freight market is the extent to which road freight operators can offer competitive rates [9] on the main corridors for haulage of bulk commodities. However, a major concern is that this price competitiveness does not account for the significant externality costs associated with road freight, including road deterioration, road crashes, pollution/emissions and congestion.

3.4.1.1.2 Infrastructure Condition

Another significant factor that made road a more popular option for the freight industry was the poor state of rail infrastructure. This is mainly a result of underinvestment in the rail sector between 1986 and 2005, which led to inadequate rail capacity and low reliability of rail as a mode for freight movement. This will be covered in greater detail in Section 3.5.

3.4.1.1.3 Long Transit Times

In South Africa, rail freight movement is generally slower than road freight movement. Railways tend to follow longer routes than roads to avoid features such as mountain ranges and deep river basins. Also, for train stability reasons, the Cape (narrow) railway gauge used in South Africa only permits low speeds compared to the standard (wide) gauge used in other countries. Transnet operates heavy haul trains on the narrow-gauge tracks at maximum speeds of 80 km/h. Only specially equipped light to medium freight trains can safely exceed this limit. Due to the condition of the rail network, certain sections have speed limits, in some cases as low as 50 km/h, for safety reasons.

For road freight, until 2016 the general speed limit specified in the National Road Traffic Act (No. 93 of 1996) (NRTA) applied to all vehicles with Gross Vehicle Mass (GVM) below 9,000 kg. These limits were:

- 60 km/h on a public road within an urban area;
- 100 km/h on public road outside an urban area which is not a freeway; and
- 120 km/h on every freeway.

As a result, freight vehicles in this class could generally move faster than freight trains, on average.

In 2016 amendments were made to the NRTA. Regulation 293 was added, which requires that goods vehicles with a GVM of more than 3,500 kg, up to 9,000 kg, be limited to a maximum speed of 100 km/h. The implementation date for the

[9] Users take the service levels of modes into consideration when determining rate/price competitiveness. The rates for road freight are generally slightly higher than those for rail. However, road's service levels are much higher than those for rail, making road pricing more competitive.

amendment was 11 November 2016. The allowable limit is, however, still higher than what freight trains typically achieve giving vehicles in this category an advantage over rail.

The NRTA specifies a maximum speed limit of 80 km/h for goods vehicles with a GVM exceeding 9,000 kg, combination vehicles consisting of a goods vehicle (i.e. drawing vehicle and one or two trailers) with a total GVM exceeding 9,000 kg and articulated vehicles with a Gross Combination Mass (GCM) exceeding 9,000 kg. Despite speeds for road freight vehicles in this class being low, the speed limits and longer routes on the rail network may still make these vehicles quicker than freight trains, on average.

The time factor leads business to opt for road for contestable freight [10].

3.4.1.1.4 Lack of Flexibility

Rail suffers from less flexibility compared to road. Rail freight transport suits large scale, bulky goods over long distances, which are not the typical transport requirements for small and medium enterprises. Closely related to this lack of flexibility is the lack of intermodal facilities in certain areas, which makes the use of rail less feasible for businesses located in such areas.

3.4.1.1.5 Other Factors

Other factors that have been cited as reasons for preference of road over rail include perceived lack of pricing transparency, poor security and a less customer-centric culture offered by rail service providers. Rail freight services are provided by Transnet, a large, state-owned enterprise, whereas road freight services are provided by multiple, privately-owned companies. The latter have a greater ability to provide a competitive, responsive, flexible and customer-centric service.

A customer survey conducted during the formulation of the National Freight Logistics Strategy, 2005, evaluated customer perspective regarding road freight, rail freight, ports and air freight. Comparison of modal performance parameters for rail, road and other modes is presented in Figure 3-12, which shows that user perspectives were more positive toward road than rail across all the parameters evaluated at the time. Although customer perspective regarding the modes may have changed since the time of the survey, the findings are helpful in understanding the customer perceptions that contributed to the decline in rail market share over the past years. Similar surveys may be necessary in future to find out if progress has been made in addressing customer concerns and perceptions regarding rail.

[10] Contestable freight is made up of cargo types for which the practicality and cost of using either of two or more competing modes are comparable. This is opposed to non-contestable cargo, which is optimally transported using one specific mode. As an example, Iron Ore on the Sishen to Saldanha line is considered non-contestable as it is most efficiently and practically transported only by rail.

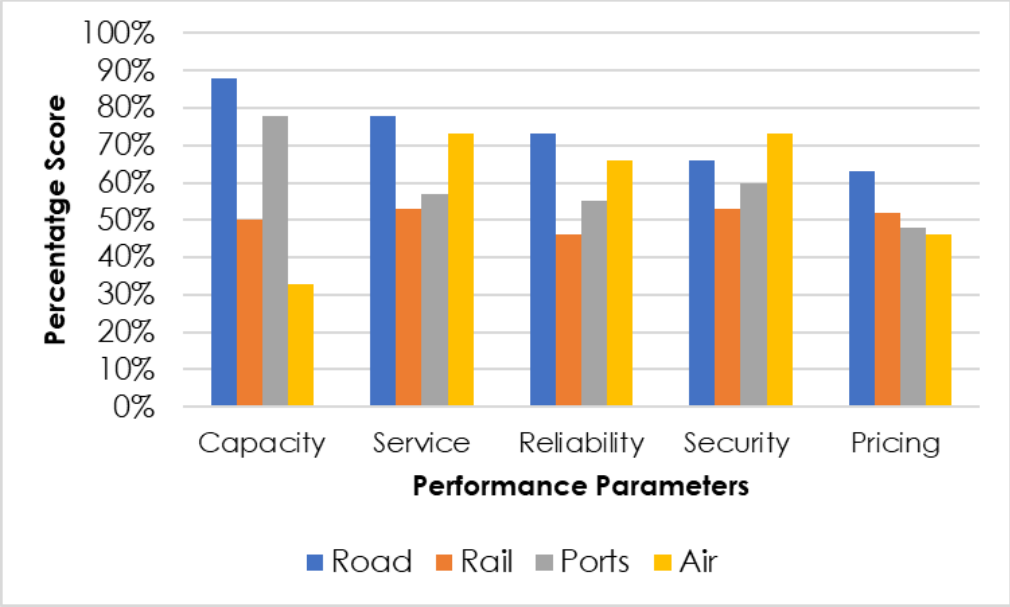

Figure 3-12: User perspectives of modal performance parameters (2005) [11] *(National Department of Transport , 2015)*

3.4.1.2 Implications of road dominance

The impact of road freight dominance has been extensively publicised in South Africa, and in the Western Cape. The key issues that result from road freight dominance are discussed below.

3.4.1.2.1 High Logistics Costs

Logistics costs refer to all costs incurred in the movement of goods and include a range of components such as transport costs, warehousing costs, inventory carrying costs, administration and order processing costs. Transport costs make up the largest component of logistics costs. A study by Stellenbosch University showed that transport costs made up 61% of logistics costs in South Africa and 63% of logistics costs in the Western Cape in 2011 (Havenga, Goedhals-Gerber, & van Eeden, 2014). This proportion is considerably higher than the world average of 39% (Rodrigue, Comtois, & Slack, 2009), showing that transport cost reduction requires attention in South Africa and in the Western Cape. A reduction in transport costs can lead to overall reduction in logistics costs.

Since road freight transport rates are generally higher than those for rail, a high road freight market share increases transport costs and overall logistics costs. In 2014, logistics costs for South Africa were estimated to be 11.2% of GDP (Havenga, Simpson,

[11] The high score for road under the pricing parameter does not imply that road freight rates were the lowest. Users took service level of the different modes into consideration in determining the fairness of pricing. As a result, road which offered high service levels had pricing which was considered fairer than that for rail, as an example. Although rail rates would have been lower than those for road, rail's service levels were too low and made its pricing less competitive.

King, & Braun, 2016). This percentage would increase to 51.5% if only the transportable [12] component of GDP was considered (Havenga, Simpson, King, & Braun, 2016).

A comparison of logistics costs as a percentage of GDP for South Africa and select countries is presented in Figure 3-13.

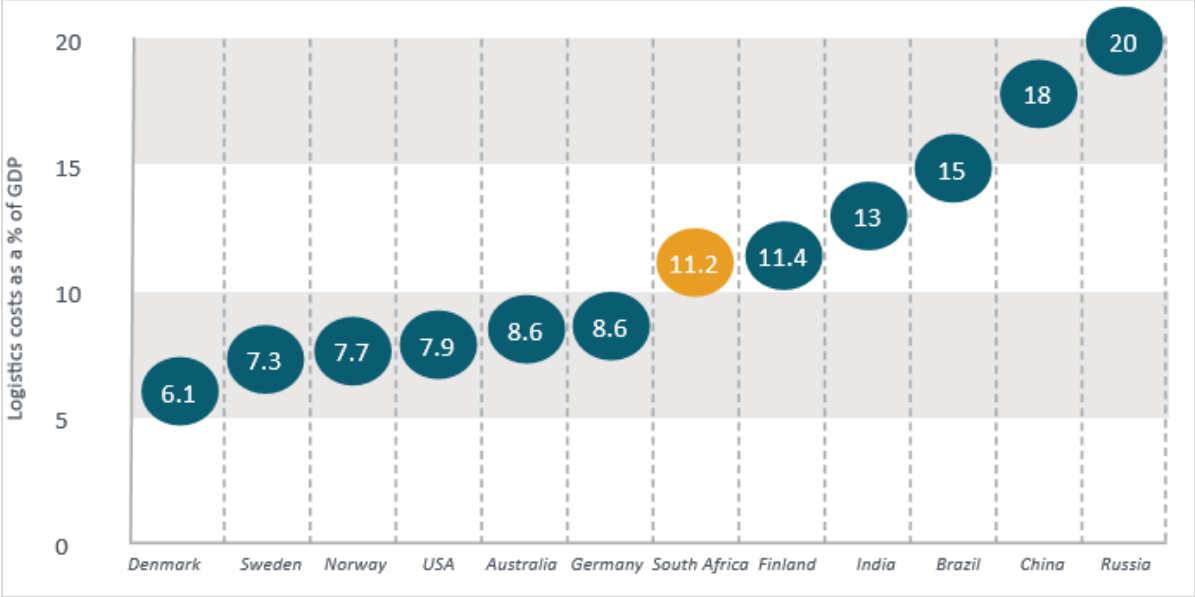

Figure 3-13: Comparison of South Africa logistics costs with logistics costs for select countries *(Havenga, Simpson, King, & Braun, 2016)*

Although South Africa's logistics costs as a percentage of GDP are lower than those for all developing economies in Figure 3-13, the country performs poorly in comparison with most European countries. This indicates that there is room to improve to match international best practices.

An FDM developed concurrently with this Strategy showed that in 2016, the Western Cape's logistics costs made up 16.5% of South Africa's logistics costs.

High road freight logistics costs expose both South Africa and the Western Cape to economic shocks. Fuel is among the largest contributors to the cost of road freight. Since South Africa (and consequently the Western Cape) is a net importer of petroleum products, increases in oil prices can lead to further increases in transport costs, which negatively impacts economic competitiveness and growth.

3.4.1.2.2 High Freight Transport Externalities

Road freight transport contributes to several negative externalities [13]. These include:

[12] Transportable GDP is the component of GDP earned only in the primary and secondary sectors of the economy. The two sectors have greater transport demand than the tertiary/services sector. Transportable GDP provides a better understanding of transport intensity and transport impacts in an economy as the measure eliminates the distortion of economic activities that are less transport intensive.
[13] Externalities result from situations when the effect of production or consumption of goods and services imposes costs or benefits on others, yet the costs are not reflected in the prices charged for the goods and services being provided.

- Many road traffic accidents involving freight vehicles: Traffic accidents involving freight vehicles are generally of high severity and have high secondary impacts due to the time it takes to clear accident sites. Factors that contribute to freight-related traffic accidents include unroadworthy vehicles, poor driving, driver fatigue and inadequate traffic management. These factors are common in the road freight sector due to operators' efforts to minimise cost leading to overworking of drivers, inadequate vehicle maintenance budgets and low prioritisation of driver training;
- Road infrastructure damage: In 1993 the DoT increased legal axle mass loads (LAM) of road freight vehicles from 8,200 to 9,000 kilograms. The additional wear introduced by the increased axle weight amounted to a 60% increase in the road loading for the same amount of traffic, if all axles were loaded to the permissible maximum. This has led to more rapid deterioration of road infrastructure along the freight corridors;
- Contribution of road freight vehicles to congestion, especially around ports and intermodal facilities; and
- Air and noise pollution from many heavy vehicles.

While the direct costs of road freight transport are generally understood and transferred to users, the externality costs listed above are in most cases not passed on to the operators and are effectively subsidised by society. There is no existing user-pay framework in the Western Cape to apportion the cost of road freight externalities to users. Without transfer of road freight externalities to operators, the transport of freight by road will likely remain more competitive than rail. Transferring the externality costs to users may help to shift freight towards other modes, particularly rail.

Estimates of Road Freight Externalities

Table 3-2 presents data on estimated externality costs per ton-km of freight transported in South Africa. The data is based on an FDM developed with this Strategy and shows that externality costs per ton-km of road freight transport are estimated to be close to 15 times those for rail. Accidents and emissions make the largest contribution to road freight externalities.

Table 3-2: Estimated average national road and rail externality costs per ton-km

Externality	Road Cost (c/ton-km)	Rail Cost (c/ton-km)
Accident	4.08	0.29
Congestion	1.71	-
Emissions	5.21	1.03

Externality	Road Cost (c/ton-km)	Rail Cost (c/ton-km)
Land use [14]	0.93	0.09
Noise	1.98	0.02
Policing	0.99	-
Total	**14.9**	**1.43**

In addition, total externality costs for the Western Cape were estimated in the FDM. The estimated annual costs for externalities for the two (2) modes in 2017 are presented in

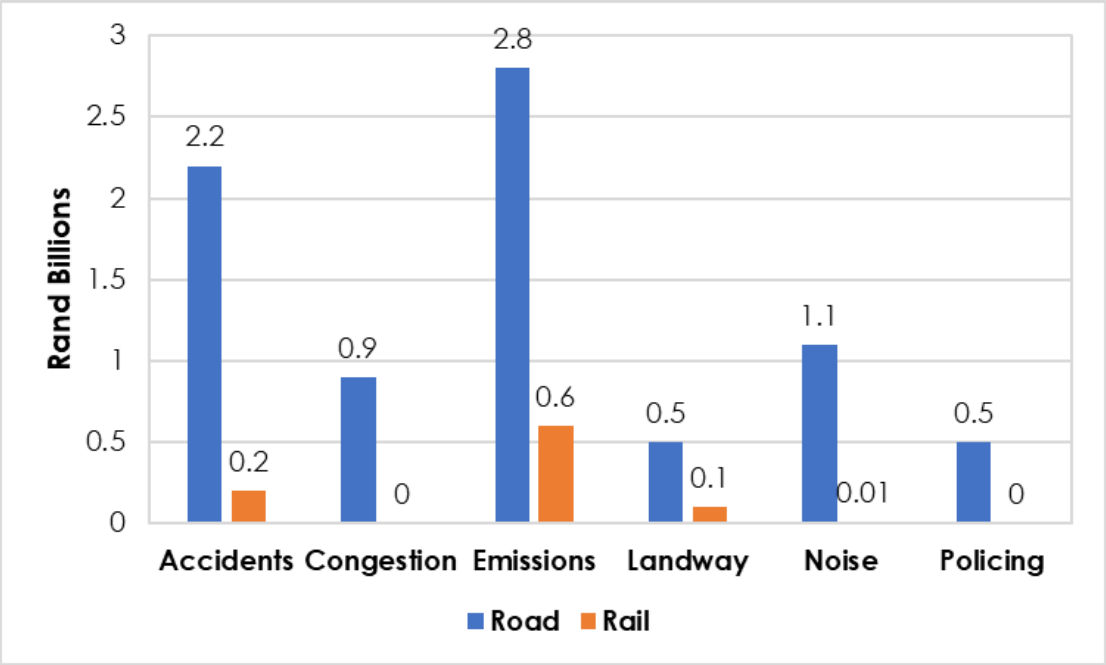

Figure ***3-14***.

[14] This reflects the cost of land used for road right-of-way and other public facilities dedicated for vehicle use.

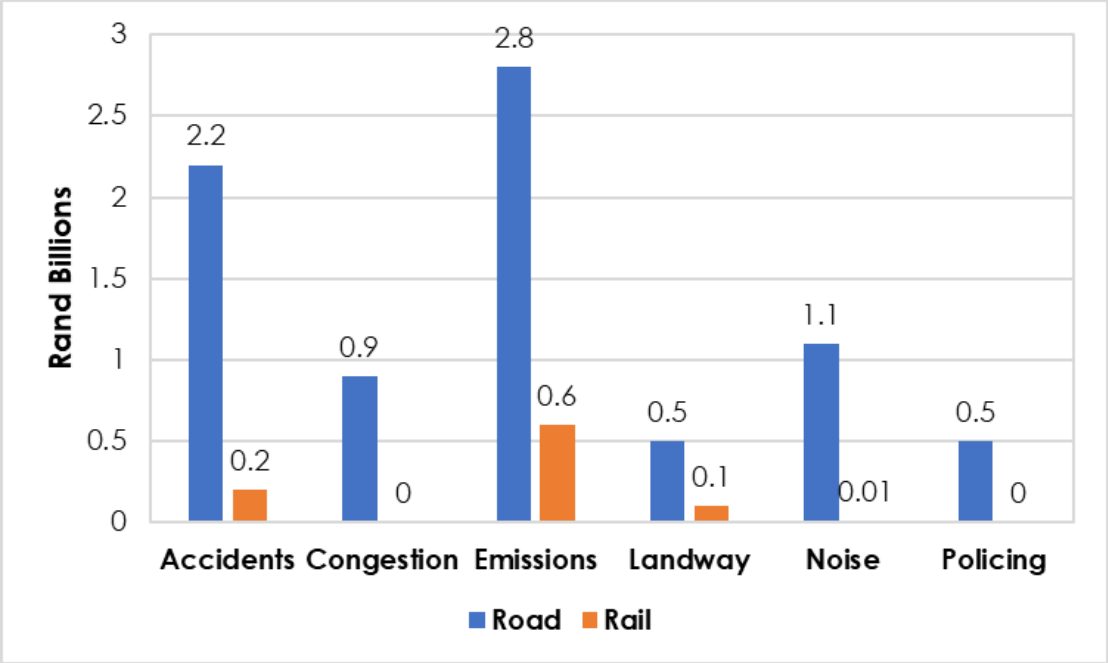

Figure 3-14: Estimated Western Cape road and rail freight externality costs for 2017

It is noted that data in Table 3-2 and

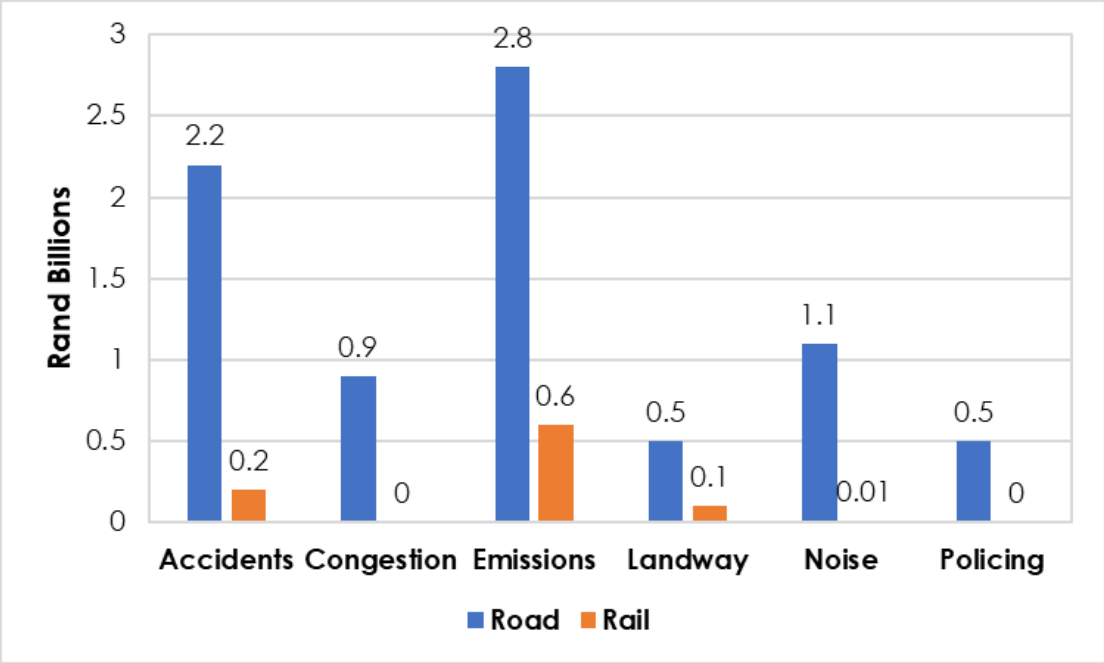

Figure ***3-14*** does not incorporate cost of road infrastructure damage. Road infrastructure damage should be priced in road user charges and is, therefore, generally not included in the calculation of externalities.

Ongoing work is needed in the Western Cape to monitor freight externalities. The CoCT, through its Transport and Urban Development Authority (TDA), is the only region that has begun to monitor road freight externalities through the Transport Development Index (TDI). A similar index can be considered for the province, which could serve as a basis for identifying trends in externality costs. Better monitoring of

externalities is useful in the development of policy for transferring cost of the externalities to road users to promote modal shift as discussed in Section 3.4.7.

3.4.2 Road to Rail Modal Shift Opportunities

3.4.2.1 Western Cape Rail Market Share Potential

The output of the FDM for the Western Cape, developed as part of this Freight Strategy indicates that 6.5m tons could be shifted to rail on the N1 corridor, without structural changes to the economy or considerable investment in rail infrastructure. The total modal shift opportunities on Western Cape province corridors is summarised in Table 3-3.

Table 3-3: Western Cape corridor road to rail shift potential

Route	Road tons (million)	Rail tons (million)	Potential road to rail shift (million tons)
N1	26.7	1.1	6.5
N2	7.7	0.06	0.94
N7	3.1	2.9	0.5
Metro	22.2	0.05	-
Total	**59.7**	**4.11**	**7.94**

The data in Table 3-3 shows that the overall rail market share for the Western Cape is still slightly below 6.5%, although the mode's market share on the long-distance corridors is 9.8%. If the modal shift opportunities presented in the table materialise, the market share for rail on the long-distance corridors could increase to as much as 29%.

A more comprehensive assessment of modal shift opportunities will have to consider the demand elasticity of the different modes, which will be useful in developing appropriate policy mechanisms for promoting modal shift. In other words, simply identifying quantities of rail-friendly cargo that are currently moved by road may not be adequate since the actual shift depends on additional factors, for example, cost competitiveness and relevant policy. As an example, Australia's Bureau of Transport and Regional Economics maintains a Transport Elasticities Database, which provides information on how changes in policy or cost of one mode are likely to affect use of a competing mode.

3.4.2.1.1 Commodities with the Most Significant Modal Shift Opportunities

A 2010 study, Identification of Key Target Markets for Intermodal Freight Transport Solutions in South Africa, focusing on rail and road identified the Cape Town-Gauteng and the Durban-Gauteng corridors as the two corridors where rail has significant

growth potential. The key commodity groups that were identified as having the most significant opportunities for road-to-rail shift were:

- Processed foods;
- Beverages;
- Chemicals (other than petrochemicals, which are predominantly transported by pipeline);
- Paper and paper products; and
- Wood and wood products.

Of these commodities, processed foods and beverages are the most relevant to the Western Cape.

3.4.2.2 Transnet's Market Demand Strategy

Over the last decade, Transnet, with the support of National Government, has implemented initiatives aimed at boosting its operational performance and reclaiming market share due to the realisation that an effective freight rail network is vital to socio-economic development in South Africa. An increasing awareness of sustainability issues, both globally and in South Africa, was also a factor in renewing the interest in freight rail, considering that the mode generally has lower environmental and social costs when compared with road-based alternatives.

Transnet developed a Market Demand Strategy (MDS) to guide its improvement programme. The goals of the MDS that are relevant to freight are:

- To address capacity constraints;
- To improve the performance of the regional rail system;
- To shift freight from road to rail;
- To reduce congestion on the country's roads;
- To provide world-class infrastructure and technology; and
- To build infrastructure that meets the demands of the growing economy.

The MDS targets for the period 2011/2012 to 2018/2019 are presented in Figure 3-15. The targets include significant increases in the tonnage of coal, iron ore, containers and general freight transport by rail.

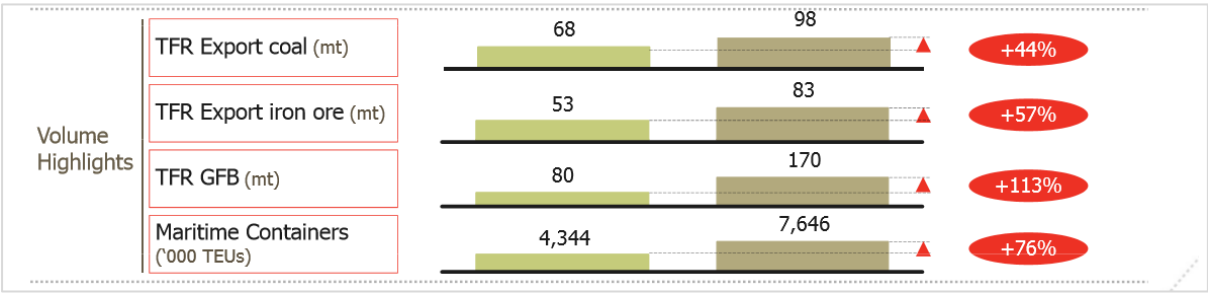

Figure 3-15: MDS market growth targets FY11/12 – FY18/19 *(Transnet, 2012)*

3.4.2.2.1 *Transnet MDS Progress*

Transnet has made considerable progress in the MDS targets although such progress has generally been below target. A summary of the progress made by end of FY16/17 is presented in Table 3-4. The progress is assessed by calculating a required average annual growth, which is used to determine theoretical targets for FY16/17 and comparing these targets with the actual volumes achieved in FY16/17 as presented in Transnet's financial statements.

Table 3-4: Transnet MDS progress

Commodity Group	FY11/12	FY18/19 Target	Required Average Annual Growth	Required FY16/17 Volume	Actual FY16/17 Volume	Variance (%)
TFR Export Coal (mt)	68	98	4.3	89.4	73.8	-17.5%
TFR Export Iron Ore (mt)	53	83	4.3	74.4	57.2	-23.2%
TFR General Freight Business (mt)	80	170	12.9	144.3	88.1	-39%
Maritime Containers (000 TEUs)	4,344	7,646	471.7	6,702.6	4,396	-34%

Although meaningful ground has been made, progress has been below target across all commodities. The considerable progress may be a sign that rail is regaining market share. No Western Cape specific data could be sourced during the development of the status quo to determine the progress made in the province.

There are examples of private sector companies becoming more interested in rail, a sign that perceptions regarding rail freight transport may be improving. Such examples include ArcelorMittal South Africa (AMSA) which recently made an announcement that it was migrating transportation of some of its products from road to rail, with the support of Transnet Freight Rail (TFR), Barloworld Logistics and Grindrod Intermodal (Naidoo, 2017). The decision is based on both cost and environmental sustainability considerations. A new distribution centre set up to support the strategy will result in an annual reduction of about 40,000 truck trips across the country's road network when it is operating at full capacity.

3.4.3 *Solid Waste Transport Modal Shift Opportunities*

3.4.3.1 *Waste-on-rail initiatives*

Consideration has been given to shifting waste transport from road to rail in the Western Cape. As with shifts of general cargo to rail, the potential for shifting waste to rail is however, not well understood. No detailed studies or demand modelling has yet been conducted to quantify the potential of shifting waste transport to rail or to understand the feasibility thereof. Despite this, waste-on-rail initiatives do already exist

in the Western Cape. One of the largest such initiatives is the City of Cape Town's waste-on-rail initiative in Athlone, which handles up to 2,000 tonnes per day. The CoCT freight strategy suggests a need to assess the potential to increase waste-on-rail from Athlone or other waste disposal sites. The DEA&DP is promoting waste regionalisation [15] in the province, presenting further opportunities for waste-on-rail. Waste transfer stations [16] that are used in the waste regionalisation strategy offer some of the best potential for transporting waste by rail.

3.4.3.1.1 Waste-on-rail challenges

There are several challenges in the waste-on-rail approach. One of the key challenges is that the location of transfer stations doesn't always align with existing rail branch lines. As a result, dedicated rail branch lines may be required to provide access to the sites. Similarly, landfills may be located far from existing rail lines. The cost of extending the rail network to cater for the needs of waste-on-rail initiatives may be prohibitive. Transnet indicated that it was working on a container solution, in which waste will be loaded onto road-based containers and transported to the nearest intermodal facility for transport by rail. If this approach is successful it may improve the potential to expand waste-on-rail initiatives in the Western Cape.

Another challenge is that the waste-on-rail approach requires significant coordination and negotiation among several stakeholders regarding investment, ownership and ongoing operation of the service. No specific structure currently exists to facilitate such coordination.

Nevertheless, from DEA&DP's perspective, the value of moving waste-on-rail is immense, particularly with regards to the potential cost savings. Efforts to take forward this initiative may include the completion of feasibility studies for additional waste-on-rail sites in the Western Cape, engaging with Transnet on branch line requirements, or taking steps to locate transfer stations near existing branch lines with support from private sector partners.

3.4.4 Pipeline Modal Shift Opportunities

Pipelines are suited to transport bulk liquids and gases over long distances. There are limited commodity groups suitable for transport via pipeline. There is little competition between pipeline and other modes, especially for transport of bulk liquids and gases over long distances. As a result, most commodities that are best moved by pipeline are generally transported using this mode over long distances. However, some competition between road, rail and pipeline does exist for the local distribution of certain commodities. An example is the transport of jet fuel from the Chevron Refinery in Cape Town to the Cape Town International Airport (CTIA). Currently, this is done using trucks although increasing demand may make pipeline a more economically

[15] Waste regionalisation refers to the bundling of municipal waste management needs of several municipalities and tackling the problem they share by creating one regional facility.
[16] Transfer stations are hubs where waste is consolidated and transferred to large, long-distance trucks or trains for delivery to landfill sites or other disposal facilities. Consolidation leads to economies of scale and reduces the cost of transporting waste to distant landfill sites.

viable option. Transnet has proposed a pipeline for this purpose in its 2015 Pipeline Development Plan. The route of the proposed pipeline is shown in Figure 3-16.

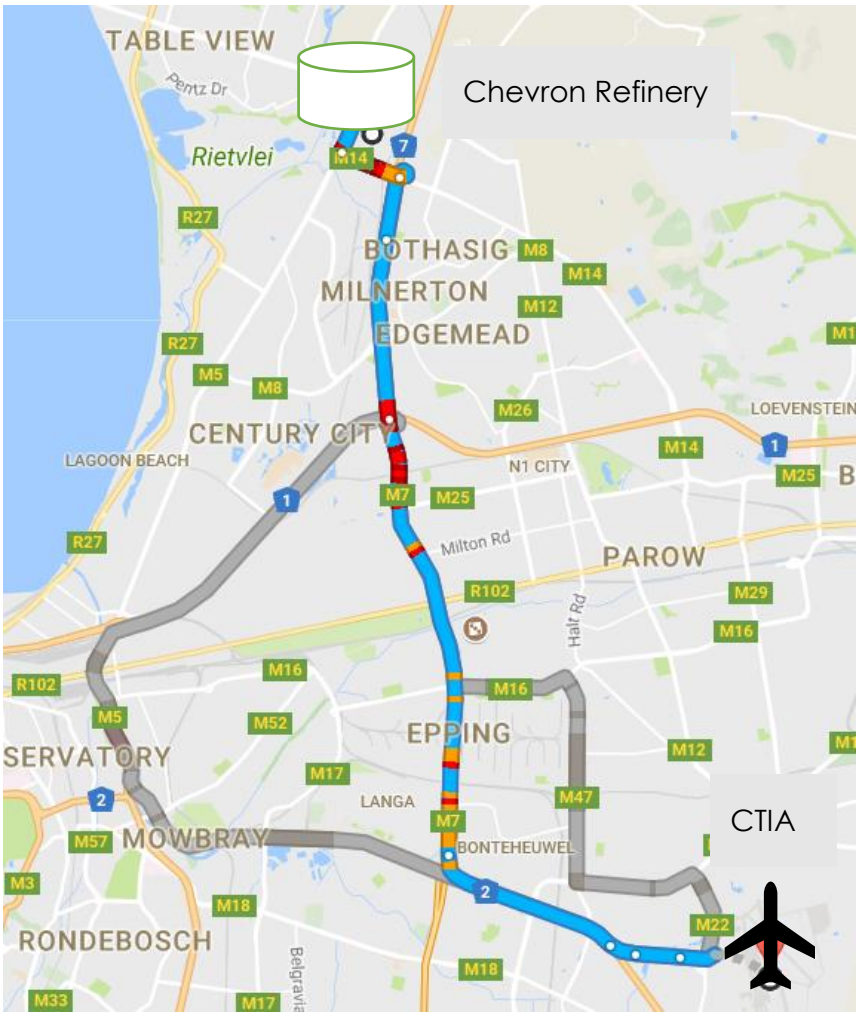

Figure 3-16: Route for proposed Chevron pipeline to CTIA

3.4.5 Road to Coastal Shipping Modal Shift Opportunities

Coastal shipping may offer opportunities for shifting some freight off the road, given the coastal location of the Western Cape. The mode is suited to the transport of both general freight (e.g. containerised cargo) and bulk cargo (e.g. cement and petroleum products transported on dedicated bulk carriers). For the movement of appropriate freight, coastal shipping offers advantages, especially over road. These advantages include lower unit cost and less externalities such as congestion and pollution. Despite the potential benefits, the mode does not have substantial market share in South Africa and in the Western Cape. A 2011 DoT Maritime Transport Sector study cites the following possible reasons for the discrepancy:

- Weather and sea conditions along sections of the South African coast that preclude the maintenance of punctual and reliable services. During engagement with industry, the increasing frequency of weather-related delays at South African ports was raised as a concern. Port turnaround times are greatly impacted by high wind speeds and ocean currents, which are occurring more

frequently than in the past. The Port of Cape Town has been recording wind speeds of up to 120 km/hr and such wind speeds are higher than the 80 km/hr limit at which cargo can be safely loaded and offloaded. Storm damage to the port of Durban in October 2017 is another example of how changing weather patterns are impacting the maritime industry;

- Port charges that are arbitrarily too high, making coastal shipping less competitive than road and rail over short routes. The issue of high port tariffs was also raised during consultation with industry in the Port Liaison Forum (PLF). Industry requires more clarity on how Transnet developed the current tariff structure, including the main cost drivers, to determine if the existing tariff structure is fair. Suggestions were made to look to the aviation industry, which recently reduced airport tariffs for lessons that may apply to sea ports;
- The unfair advantage that road has regarding apportionment of externalities, including road damage;
- A lack of appropriate legislation governing the right to operate in local waters, which results in foreign shipping companies being able carry domestic cargo at marginal costs in competition with local companies dedicated to coastal shipping;
- A lack of infrastructure designed to facilitate coastal shipping and to reduce the costs of coastal sea transport;
- Unsuitable type and volume of the freight moving between coastal cities. Freight moved is considered more suited to direct road transport than to multi-modal services including shipping; and
- The location of industry in South African coastal cities and the infrastructure providing access to the ports, which are not conducive to the cost-efficient intermodal movement of freight, including coastal shipping.

3.4.5.1 Coastal Shipping in South Africa

Domestic container transport by sea between South African ports is currently provided by Ocean Africa Container Lines (OACL), which provides regular services. OACL is a private operator co-owned by A.P. Moller (Maersk Line) and Grindrod Limited. In 2010, the year for which data is available, OACL's domestic inter-port cargo was less than 10% (National Department of Transport , 2011) of the tonnage of freight (including empty containers) carried by road hauliers between South African port cities (National Department of Transport, 2011). In 2010, OACL only transported domestic freight between Durban and Cape Town. The freight transported comprised of containerised bulk products, mostly sugar, malt, paper and liquids in tanks, with only the sugar being of a sufficient quantity to require the capacity of ships for transport. To transport the same amount of sugar between Durban and Cape Town using road trucks would have required between 9,000 and 11,000 trips, in both directions (National Department of Transport, 2011). In the absence of coastal shipping, transporting such

quantities by road would make it more expensive to source sugar from KZN than to import the commodity to the Western Cape from other countries.

Apart from container shipping there is a tanker service for fuel products provided by Unicorn Tankers, a division of Grindrod. Unicorn focuses on the tanker market and provides shipping services for the transportation of petroleum products along the southern African coast, as well as, East and West Africa. Unlike OACL which provides regular services, Unicorn mainly provides charter services to various oil majors and other local charterers. Unicorn's customers include Shell, Chevron, Engen, Total, SASOL, PetroSA and BP.

Besides meeting domestic freight movement, coastal shipping also helps in providing essential feeder networks for deep sea shipping companies, a service that reduces road freight demand where such feeder networks would be serviced by road. OACL currently provides feeder services in South Africa, mostly to Maersk Line/Safmarine and to 22 other smaller shipping companies.

There is no specific study that has been conducted to identify additional opportunities for coastal shipping in the Western Cape, and the corresponding benefits to modal shift that could result. Such a study is necessary to determine the effort that should be put to pursuing coastal shipping.

3.4.6 Aviation Opportunities

Air freight is mostly suitable for low volume, high value and time-sensitive cargo. Air freight generally does not compete with other modes such as rail and road due to the nature of the cargo that is optimally moved by air. As such air freight may not have a major role in modal rebalancing. However, facilitating the transport of appropriate cargo by air and strengthening links to regional and international markets is an important consideration for broader economic development strategies.

Due to the small volumes transported by air and a relatively small contribution of air to the overall freight movements in the country and in the Western Cape, there are few dedicated air freight services, leading to air freight being carried mostly on passenger planes as belly hold cargo. As a result, opportunities for air freight movement to and from the Western Cape are limited to routes that are served by scheduled passenger flights.

The extent to which such cargo is currently moved by other modes is not fully understood in the Western Cape to determine existing opportunities to the use air freight, which makes it difficult to support strategies that promote increased utilisation of the air freight sector.

Promotion of the air industry in the Western Cape is being carried out through the Cape Town Air Access project, being led by Wesgro. The aim of the project is to increase the CoCT's connectivity to targeted cities globally. The initiative is focused on growth in passenger routes, although this could have positive spin-offs that benefit air freight, considering that most of air cargo in the Western Cape is moved on passenger flights.

3.4.7 Modal Shift Policy Tools

While market forces have an influence on the selection of one mode over another, some intervention through policy is often necessary to promote certain outcomes, for example, a shift of general cargo from road to rail. This is because market-related factors may not recognise the full costs and benefits of using certain modes. As mentioned in Section 3.4.1, the cost competitiveness of road freight is largely a result of inadequate externality pricing. Hence, leaving market forces to their own devices may lead to further undesirable outcomes.

Generally, tools can be regulatory, or incentive based. For regulation-based approaches, political decision makers and regulators approach the modal shift and related externalities with various command-and-control policies. Some examples of such policies include vehicle fuel economy and emission standards or movement restrictions, such as confining local freight movement to off-peak periods. Incentive-based policies include measures such as fuel taxes, road-user charges and congestion charges (Luechingera & Rotha, 2013).

Incentive-based policies are considered more cost effective as they recognise differences in compliance costs across user groups, which improves fairness and typically exploit more behavioural responses (Luechingera & Rotha, 2013). In contrast, command and control policies often have high compliance costs and may have perverse outcomes. For example, fuel economy standards increase distance-related externalities by reducing mileage costs; strict standards for new vehicles delay the retirement of old polluting vehicles; while movement restrictions can create incentives for extra vehicles (Luechingera & Rotha, 2013).

In other cases, a combination of both regulation and incentive-based measures may be appropriate, for example the introduction of fuel economy standards and providing tax incentives on new vehicles bought to comply with the standards.

3.4.7.1 Road-to-Rail Policy Tools

3.4.7.1.1 Mileage Based Heavy Vehicle Taxes

There are several types of road user charges that can be implemented. The choice of user charge depends on the main objective of the road charging initiative. Broadly, user charges can be based on:

- Mileage – charges levied based on distance travelled;
- Time - charges levied in certain times e.g. during peak periods;
- Location - charges levied in specific areas where congestion or pollution is a major issue;
- Vehicle class – charges levied only on certain vehicle types e.g. heavy trucks or vehicles that do not meet certain emission standards; or
- A combination of more than one of the above.

In pricing road freight externalities, there has been a trend of basing policy tools on vehicle miles travelled through mileage-based taxes. Mileage based user charges achieve a closer correlation with environmental costs that vehicles impose. In addition, they provide operators with an incentive to improve load factors to minimise or avoid empty running contributing to a reduction in vehicles on the roads. In Europe, several countries have introduced mileage taxes for heavy-duty trucks to transfer cost of externalities and to better reflect associated cost, starting with Switzerland in 2001. (Luechingera & Rotha, 2013).

Case Study 3-1: Swiss heavy vehicle levy

Since 2001, Switzerland has levied a distance-related fee on vehicles with a maximum permissible total weight of more than 3.5 tons. The fee is not restricted to major highways as is the norm with other European countries. The rates are based on the maximum permissible weight and emission category of vehicles. The rates are considered substantial and range from 4.5% to 24.7% of operating and vehicle costs per mile and are not differentiated by time or location.

Studies indicate that the introduction of the Swiss heavy vehicle fee may have reduced the number of trucks on the roads by between 4.7% to 5.1%, while there are indications that rail freight market share has increased as a result. (Luechingera & Rotha, 2013)

Other European countries that have introduced mileage based heavy vehicle taxes include Germany, Austria, Poland and the Czech Republic.

Economic Impact of Heavy Vehicle Taxes

The overall economic impact of the road taxes depends on unique characteristics of an economy. Such characteristics include the percentage of production costs that are transport related, the size of the road freight industry, elasticity of road freight demand to cost and the level of an economy's trade with other regions. Observations made in other economies include:

- An increase in transport costs due to road transport operators passing on the costs of road taxes. For a country or region where transport costs are a large component of production costs, this may lead to noticeable increases in consumer prices. Where transport costs are a small component of production costs, increases to consumer prices may be negligible.
- Job losses in the road freight sector. Where the road freight sector profit margins are low, and costs of road taxes cannot be easily or fully passed on, some operators may go out of business, leading to job losses. Small to medium road operators are affected the most. This has a knock-on effect on the vehicle manufacturing and distribution sector, which may also face job losses.

However, job losses in the road freight sector may be offset by job growth in the rail sector if significant modal shift is achieved. More jobs may also be created from reinvesting the taxes in infrastructure and from growth in other sectors of the economy as a result of a more efficient freight transport system.

- Reduction in the road freight sector contribution to GDP. This can result from the road freight sector losing market share and operators going out of business. This may, however, be offset by growth of the rail sector, or by economic growth from reinvestment of revenue from road taxes in infrastructure. Where such offsetting occurs, the overall impact on the economy is negligible.
- Reduction in economic output of regions that rely on trade with other regions. If no significant shift to rail is achieved for reasons such as a poor rail network or lack of intermodal facilities, interregional trade may be impacted. This negatively affects regions that rely heavily on interregional trade. The Western Cape has such characteristics and work on road pricing needs to take this into consideration.

The observations discussed above are only examples and may not be generalised. There are more factors that can be investigated to determine the economic impact of road pricing. Many of the factors are interrelated, which results in significant complexity. A thorough assessment of all factors relevant to the Western Cape will be necessary to ascertain feasibility of road pricing in the province.

3.4.7.1.2 Promotion of Competition in the Rail Sector

Other policy tools that have been investigated for supporting the road to rail shift involve the promotion of competition in the rail sector. This may improve the productivity of rail in the same way that road freight productivity increased due to competition after deregulation. Nevertheless, the freight rail industry has specific characteristics that make this approach challenging. Most important is that rail is a network industry, where economies of scale have a key role making it less efficient to have many competing operators. Also, the freight rail industry in South Africa is a monopoly with a single player, the state-owned entity Transnet. There is no indication that this is likely to change in the near future. The provincial sphere has little influence on decisions of this nature, which are made at national level.

3.4.7.1.3 Economic Incentives for Rail Freight Users

In some cases, economic incentives can be developed to promote the shift of freight from one mode to another. These incentives include tax discounts and subsidies. An example is the Ferrobonus incentive scheme introduced in Italy in 2010 to promote the shift of freight from road to rail (Tsamboulas, Chiappetta, Karousos, & Moraiti, 2017). In this scheme, subsidies are paid to freight owners per train-kilometer over which freight is transported to promote the use of rail.

3.4.7.1.4 South Africa and Western Cape Road-to-Rail Modal Shift Policy Tools and Coordination

Although modal shift is mentioned in several strategies and policy documents, there are no policy tools e.g. road externality pricing for supporting road-to-rail modal shift currently being implemented in South Africa. There is transport related revenue collection through the general fuel levy, although such revenue is not necessarily intended for road infrastructure maintenance. The levy is not meant to discourage road use and is not set on the basis of ensuring that the full cost of road usage, including that of externalities is reflected.

Toll fees are levied on sections of certain national roads such as the N1, N3 and N4. Most of the sections where toll fees are levied are managed through concession agreements. The toll fees charged are differentiated by vehicle class. Toll fees increase as the vehicle GVM increases. Revenue from the toll fees is used to repay loans for construction of the road sections and for maintenance and upgrades of the roads. Although the toll fees are a step towards user-pay principles, the motivation for tolling on most roads in South Africa is to lessen the burden of financing infrastructure projects. There is no explicit consideration of the need to pass on cost of externalities or to promote the use of more sustainable transport alternatives such as rail. It is not clear if setting of toll fees takes costs of externalities such as pollution and congestion into consideration.

The NATMAP envisions that infrastructure usage charges will in the future provide funding for network rehabilitation, indicating that the need to develop appropriate policy tools is recognised at national level.

In the Western Cape, there are no existing policy tools in place for promoting modal shift, particularly road-to-rail. Similarly, there are no policy tools that ensure that appropriate externalities are transferred to operators or users to promote use of rail.

Coordination of the road-to-rail shift initiatives between the WCG and external stakeholders has room for improvement. While some coordination with Transnet, for example, has been ongoing to drive the modal shift agenda, such coordination has mostly been informal. This makes it difficult to measure progress with modal shift initiatives or to maintain accountability on the initiative.

As such the following are key to support the modal shift imperatives:

- Clearly defined provincial objectives regarding the modal shift imperative. The Western Cape has previously targeted a 10% market share for rail, which can be reviewed or maintained. Such objectives need to take information on opportunities for modal shift which will be output of a provincial FDM into consideration;
- Formal institutional arrangements for managing the modal shift initiatives. This includes all key stakeholders and defines roles and responsibilities for delivering on specific interventions that support modal shift objectives. Stakeholders need

to include departments such as DEDAT as some policies and initiatives may have economic implications that need to be carefully considered; and

- Appropriate policy for supporting modal shift e.g. policy framework for transferring externalities.

3.4.7.1.5 Challenges of Implementing Modal Shift Policy Tools

Implementation of modal shift policy tools, especially those that are based on road externality pricing is not at all simple. Given the potential negative impacts of implementing such policy tools as discussed in Section 3.4.7.1.1, further investigation is required regarding how to do this in a way that avoids an overly adverse reaction from the freight transport industry or on the economy.

In the absence of a coordinated national approach to road freight externality pricing, the implementation of such measures in the Western Cape may increase costs, reduce competitiveness and discourage investment, to the benefit of other provinces.

Buy-in for such interventions will be required from key stakeholders, including national government, the provincial leadership, DEDAT, business and labour. Achieving such buy-in often takes time, for example, the Swiss distance-related heavy vehicle tax discussed in Case Study 3-1 only received political approval after 20 years of work (Felix & Neuenschwander, 2002) and even had to go through a referendum.

The likelihood of resistance to such policies is high, while the potential costs of implementation and enforcement are also important considerations. E-tolling in Gauteng, which was meant to apportion the cost of the Gauteng Freeway Improvement Project to users and to promote a shift of commuter transport from road to rail (Gautrain), has faced significant challenges. Some of the resistance from the public to such interventions comes from a lack of clarity on what other revenue streams, such as vehicle licencing fees and national fuel levies, are currently used for. The argument is that if such revenue streams are ring-fenced for infrastructure work, there may be no need for additional user charges. While the Gauteng e-tolling initiative was not freight specific, it can provide some important lessons when considering freight externality pricing policies in the Western Cape. The CoCT has recently taken SANRAL to court to prevent the implementation of the N1/N2 Winelands Paarl Highway Toll Project which would introduce tolling on sections of the N1 and N2 that run through the City's area of jurisdiction (South African National Roads Agency Limited v City of Cape Town (66/2016) [2016]). The case mentions the City's view that local economic growth would be negatively affected, and that traffic will divert to secondary roads, causing congestion, as the main reasons for the objection.

Similarly, the implementation of tolling on other national roads has not been straight forward. An example is the N4 toll road from Gauteng to Mozambique, where toll pricing was the subject of much controversy prior to implementation. Road users were unhappy that they had to pay for using a road that was previously free, leading to resistance and the need to revise toll fees downward (United Nations Development Programme, 2012). The toll fees were a burden on local communities living along the

road, who would need to use the road regularly, for example, when commuting to work or to school. The DoT had to respond by initiating bicycle distribution programmes to affected communities to alleviate the challenges especially for families with children of school going age. Another challenge was the need to dealing with traffic that diverted from the highway onto local roads to avoid toll gates. This led to localised congestion in some areas and excessive damage to the local roads that were not designed for heavy traffic.

The lack of alternatives to road is also a key issue. The Western Cape can only indirectly influence Transnet's performance and delivery. If rail service levels, productivity and capacity do not improve sufficiency to facilitate a shift to rail, the WCG has little power to change this. This also applies to interventions such as the provision of intermodal facilities, which are key elements in encouraging modal integration and a modal shift. If no good alternatives are present, implementing modal shift policy gets difficult as such policy will be perceived to be unfair.

3.4.7.2 Western Cape Coastal Shipping Policy

In South Africa, and in the Western Cape, there is currently no specific policy that promotes or governs coastal shipping. At national level, coastal shipping was not investigated specifically for the draft White Paper on National Maritime Policy of 2006, but the need for regional coastal shipping was emphasised. The 2017 Draft Comprehensive Maritime Transport Policy for South Africa includes a policy statement on coastal shipping and related rights to operate in local waters, which allow for:

- The development of a regulatory framework, inclusive of licensing, restrictions and enforcement functions as well as a roadmap for implementation in the coastal shipping market, also considering other regulatory frameworks concerning movement of goods, such as customs regulations;
- Introduction of restrictions on certain ship owners to operate coastal shipping as part of a long-term strategy to promote South African ship ownership to serve national and regional economy;
- Promotion of preferential treatment and an enabling environment for ships that operate in South African waters to be on the South African register;
- Introduction of measures requiring South African seafarers to be granted exclusive leave as appropriate to provide coastal shipping activities undertaken by ships between ports of the Republic, or within South African waters; and
- Promotion and prescription of a licensing regime to regulate freight movement between ports within South Africa.

Implementation of this policy statement may help to promote coastal shipping to support the shift of appropriate cargo from road to maritime transport.

In addition, coastal shipping has been identified as an industry that has opportunity for growth under Operation Phakisa. Operation Phakisa has a steering committee on Marine Transport and Manufacturing Delivery which has developed initiatives for encouraging the establishment of South African registered fleets for coastal shipping.

The NATMAP freight transport strategy vision statement also envisages that coastal shipping will be promoted to improve freight transport delivery in the country.

3.4.7.3 Policy Tools for Promoting Air Freight

Air freight is the realm of national government. The SACAA has primary civil aviation mandates and is overseen by the DoT. The WCG has no aviation mandates and is, therefore, unable to develop or implement air freight policy in the Western Cape. The DTPW's efforts in this sector would, therefore, be limited to engaging with national government and the relevant national entities for policies and strategies and implementation programmes that support an appropriate role for air freight in the Western Cape.

3.4.8 Implications for Strategy Formulation

Moving goods on the appropriate transport mode is a key step towards optimising freight transport delivery. While the long-term approach is to reduce the material intensity of the economy and freight transport (as discussed in the Chapter 3.3), such a state cannot be reached quickly. Therefore, alternative and complementary strategies are required. Finding the optimal modal balance, based on the system needs and limitations, to achieve system efficiencies is one such strategy for intervention in the short to medium term. This will be necessary to ensure that all competing modes of transport achieve market shares in accordance with their comparative cost advantages. When that is achieved, the freight transport costs to the provincial economy are optimised.

Modal shifts, particularly road to rail, have received significant attention, with much being done by stakeholders such as Transnet to begin improving the rail infrastructure and service levels. However, the general view among stakeholders is that the road freight mode share remains too high. This may partly be explained by the continued absence of a mechanism for apportioning the cost of road externalities to reflect the full costs. Improved information on externality costs and options to transfer these is, therefore, an important consideration in the formulation of this Freight Strategy. Options for transferring externality costs must consider the challenges encountered in implementing similar externality pricing as discussed in Section 3.4.7.1.5. As indicated, the Western Cape Government, and its DTPW, currently have limited information on opportunities for modal shift in the Province. Actions for quantifying the modal shift opportunities are key elements that this Freight Strategy should incorporate. Such an understanding is beneficial and adds value by directing focus to the most effective interventions and for measuring progress. An effective strategy is dependent on good-quality information, which highlights the importance of work on the FDM and subsequent updates (ideally annual).

With other modes such as air, pipeline and maritime transport, DTPW's lack of direct influence is an important consideration, putting significant emphasis on the need for solid partnerships and communication efforts between departments and other spheres of government. This does not detract from the need for the WCG and its DTPW to develop strategic positions for these sectors.

3.5 Status quo of Western Cape Freight Infrastructure

3.5.1 Rail Infrastructure

In 2014, Transnet noted that the demand for rail services at the time exceeded supply on a national level. Capacity issues existed on the rail network, which are exacerbated by the narrow Cape gauge railway lines which constrain the allowable loading capacity. Restrictions on the horizontal and vertical clearances on the narrow-gauge railways compared to international, wider standards also constrain allowable loading and speeds. As a result, most of the South African rail network cannot carry modern double stack wagons nor can it easily accommodate piggyback operations where road semi-trailers are carried on rail flat beds, with implications for the potential of intermodal transfer.

The rail sector in South Africa suffered a period of underinvestment in the latter decades of the 20th Century. Rail was considered a perennial loss maker, unable to compete effectively with other modes and, therefore, became a low investment priority during the period that apartheid-South Africa was under economic sanctions (1970s, 1980s, early 1990s). This, coupled with the deregulation of the road freight industry, accelerated market share loss of the rail sector, further reducing the resources available to invest in network infrastructure improvements.

Underinvestment and a declining market share saw low density freight rail routes, especially branch lines, being abandoned to focus on core, higher volume corridors, reducing the reach and accessibility of the freight rail network. Private sector interest in operating the low-density rail routes has not been allowed in some cases leading to continued degradation of the facilities. These actions further accelerated rail's loss of market share, as road freight operators replaced rail on low density routes. In the first decade of the 21st Century, this trend was further compounded by the deployment of side-tipper interlinks [17] by road hauliers that facilitated direct competition for long distance haulage of heavy bulk commodities such as coal, grain, and ore.

However, over the last decade, the state, through Transnet, began investing heavily in freight rail.

3.5.1.1 Western Cape Network

The Western Cape rail network is presented in Figure 3-17. The key rail lines in the Province are:

- The Sishen – Saldana ore line; and
- The Gauteng - Cape Town line.

The Sishen to Saldanha railway line is an 861 km long, heavy haul, single railway line, which connects iron ore mines near Sishen in the Northern Cape with the port at

[17] Unlike conventional end-tippers, side-tippers are designed for sideways hydraulic tipping. Side tipping improves vehicle stability when the load bin is raised during tipping. As a result, side-tippers can be made longer and can safely carry and tip larger payloads than end tippers.

Saldanha Bay in the Western Cape. The traffic is predominantly export iron ore to Saldanha. The overall condition of the line infrastructure is good taking into consideration that it carries the heaviest axle tonnage (30 t/axle).

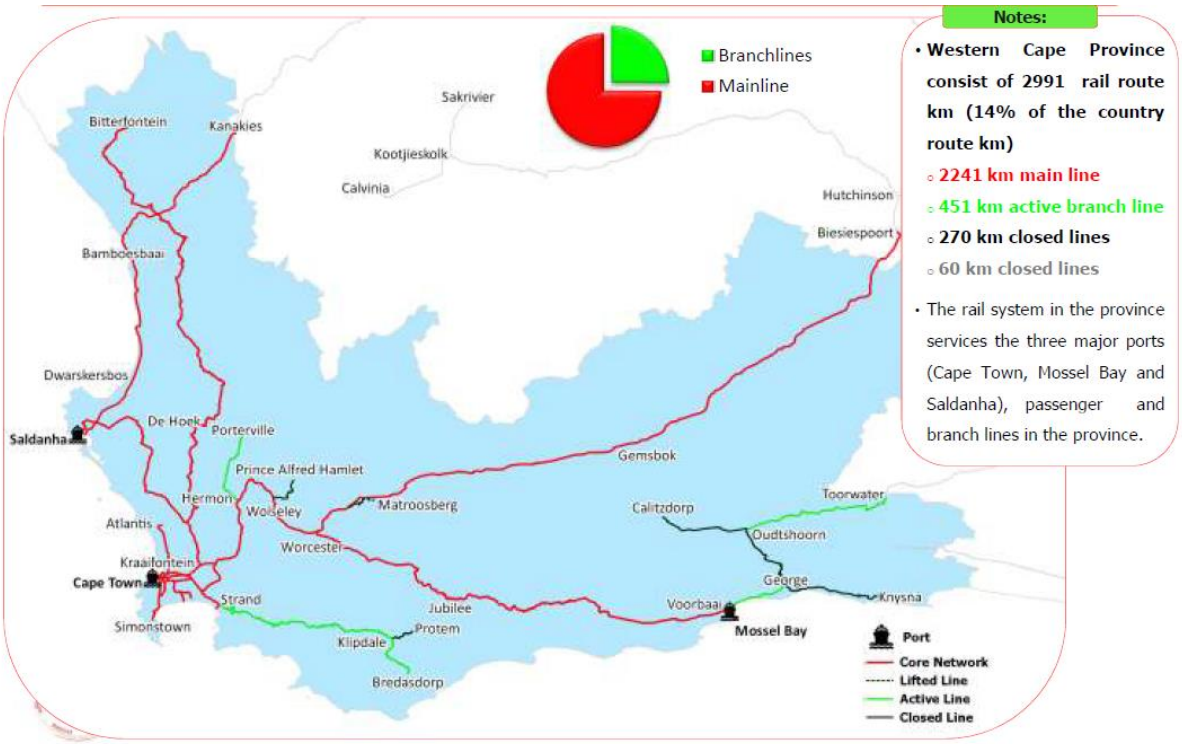

Figure 3-17: Western Cape rail network *(Transnet, 2015)*

The Gauteng-Cape Town Corridor (CAPCOR) runs from Gauteng to the port of Cape Town. Traffic is predominantly containers, domestic coal to Saldanha and other general freight. The condition of this line is fair to good. The performance of the Kimberley to Vereeniging section and Vereeniging to Noupoort section of the line is substantially below the network average and its capacity is severely limited, which affects movement of freight from the Western Cape to Gauteng and vice versa. Some of these capacity constraints are a result of mixed freight and passenger rail operations and vandalism and theft, which cause signalling failures.

In the Western Cape, the primary intermodal terminals linking rail to road and maritime transport are at the port of Cape Town and at the Bellville Container Terminal (Belcon). A low volume intermodal facility is also provided at the port of Saldanha. Outside Cape Town and Saldanha there are limited intermodal facilities, while the number of operational rail loading stations [18] has decreased significantly, reducing the flexibility of the mode for most businesses in these areas.

[18] Rail loading stations are locations where train loading facilities such as container lifting equipment are provided. The facilities allow loading of freight onto train carriages.

3.5.1.2 Transnet's Rail Strategy

3.5.1.2.1 Market Demand Strategy

Transnet has responded to the infrastructure challenges by implementing the Market Demand Strategy (MDS) introduced in Section 3.4.2.2. Through the MDS, Transnet aims to boost its operational performance and to reclaim market share. The MDS has support of the National Government due to the realisation that an effective freight rail network is vital to socio-economic development in South Africa. An increasing awareness of sustainability issues, both globally and in South Africa, is also a factor in renewing the interest in freight rail, considering that the mode generally has lower environmental and social costs when compared to road-based alternatives.

Under the MDS, Transnet plans to invest R300 billion in expanding and modernising the country's ports, rail and pipeline infrastructure over a seven-year period (Transnet, 2012). Out of this, almost R200 billion is earmarked for infrastructure. An overview of some of the planned rail projects is presented in Figure 3-18.

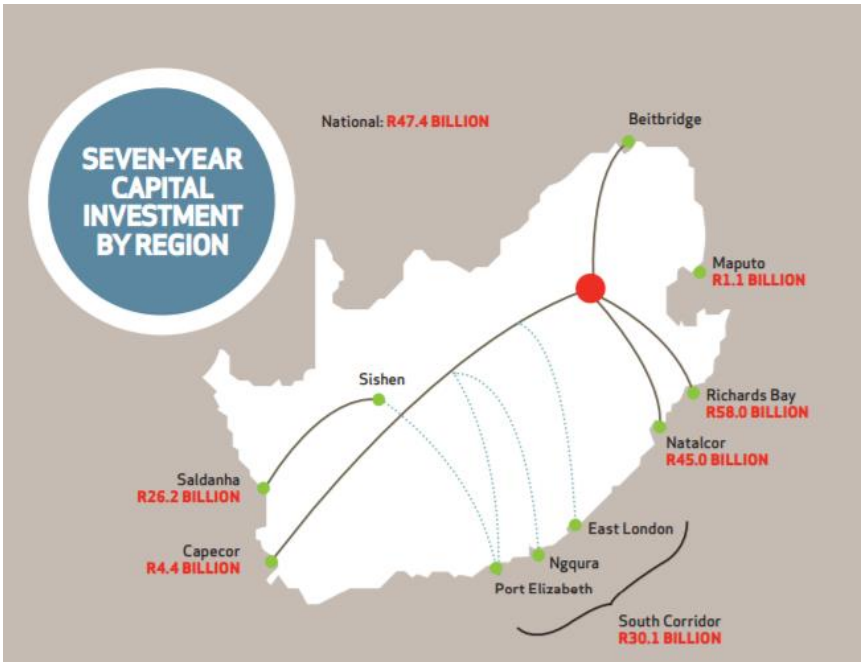

Figure 3-18: Transnet's seven-year rail infrastructure capital investment *(Transnet, 2012)*

The Western Cape specific rail investment is planned on the two main lines in the province, namely the Sishen to Saldanha export iron ore line and the CAPCOR.

3.5.1.2.2 Transnet Rail Development Plan

Transnet's rail development plan also includes considerations for improving the state of the rail infrastructure to support economic growth and to regain market share from road. The principles of the plan that apply to freight transport are:

- ***Principle 1:*** Match capacity to demand - provide adequate corridor and terminal capacity at the right place ahead of demand;
- ***Principle 2:*** Align infrastructure to freight type - heavy haul or light industrial standards depending on the freight type;

- ***Principle 3:*** Improve operational characteristics - reconfigure line infrastructure and layouts to remove bottlenecks;
- ***Principle 4:*** Ensure network connectivity - link complementary ports with inland connections;
- ***Principle 5:*** Standardise infrastructure - use similar technologies across the network to improve safety, maintainability and operational performance; and
- ***Principle 6:*** Align with PRASA/non-Transnet operator requirements - separate, re-route and enhance services where needed. Consider interoperability with branch-line services.

3.5.1.2.3 Branch Line Strategy

The abandonment and underinvestment in branch lines and low-density routes accelerated the loss of rail market share. Transnet has developed a Branch Line Strategy, which includes a focus on economic development in rural areas and regaining market share. Transnet has established an independent unit called Branch Line Operations and Management (BLOM) to implement the strategy. A Branch Line Revitalisation Programme has been initiated, which also allows for the participation of external operators through the Private Sector Participation Plan (PSP). Work has commenced on the refurbishment of several branch lines and funds have been allocated for further work in the future. There is market interest from the private sector to operate branch lines and a process to select operators and conclude the necessary agreements has begun. Requests for Proposals (RFPs) for operating several branch lines were issued by Transnet in 2015.

Strategic clusters have been identified to serve specific commodities, notably:

- Grain, which is the predominant commodity on most of the central branch lines; and
- Other commodities, including timber, fuel, fertiliser, cement, coal, gold ore and containers.

In some sectors Transnet has introduced measures that provide greater flexibility to operations of various sizes, for example operating shorter train sets to accommodate small mining operations that cannot fill up longer sets.

Freight relevant branch line revitalisation projects that Transnet plans to complete or has completed in the Western Cape are summarised in Table 3-5:

Table 3-5: Western Cape branch line revitalisation projects *(Transnet, 2015)*

Branch Line	Potential Commodity	Status	Freight Opportunity
Wolseley-Ceres-Prince Hamlet	Container	Reinstated successfully	Multimodal freight including terminal and exchange yard

Branch Line	Potential Commodity	Status	Freight Opportunity
Caledon Branch Cluster	Various general freight- malt, barley, wheat	Operational	Freight volume increase – road to rail migration
Hermon-Porterville	Grain, Cement	Operational	Freight volume increase – road to rail migration
Southern Cape Cluster	Freight - cement, coal, gypsum, flour, wheat, malt	Certain sections operational	Freight volume increase – road to rail migration

Transnet has a cautious approach towards branch lines. This is partly because reopening and operating branch lines sustainably requires a different strategic, funding and operating model to that of the high volume main lines which form the core of the company's rail portfolio.

While Transnet, with support from National Government, has put significant effort into improving the state of freight rail and to reverse the modal imbalance between road and rail, the WCG currently has little influence over or input to these initiatives. As was mentioned in Section 3.2.2.3, the structures through which the WCG (incl. the DTPW) can engage Transnet to develop a common vision and an aligned strategy do not exist. Such a platform for formal stakeholder engagement is, therefore, a necessary starting point to achieve progress and to ensure that the interests of the Western Cape are effectively communicated and recognised by these stakeholders.

In addition to the work that Transnet is doing in the Branch Line Strategy, the DoT is developing a National Branch Line Strategy, which also aims to improve accessibility and connectivity of the rail network in South Africa.

3.5.2 Road Infrastructure

3.5.2.1 Surfaced Road Network

The Western Cape Government is responsible for a total surfaced road network of 6,745 km. The Road Asset Management Plan (RAMP) 2017/18 to 2026/27, published in 2017 indicates that 96% of vehicle-kilometres in the Western Cape are travelled on surfaced roads. According to RAMP (2017/18 to 2026/27) the asset value of surfaced roads was 99% of the network's total value, requiring a large input of funding to preserve the surfaced roads in a functional condition. The breakdown of surfaced roads in the Western Cape by district is provided in Figure 3-19.

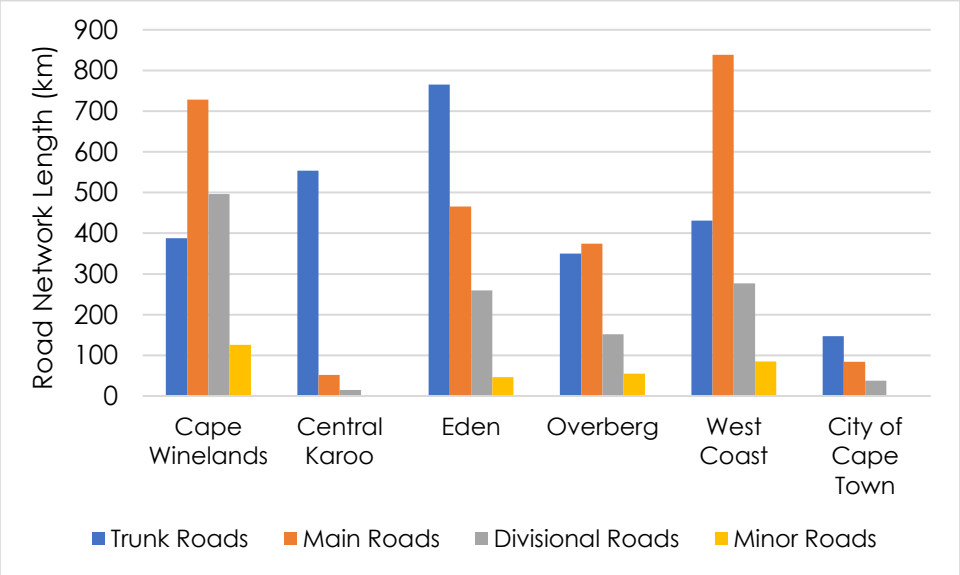

Figure 3-19: Western Cape surfaced road network *(Western Cape Department of Transport and Public Works, 2017)*

The Cape Winelands District has the largest surfaced road network, while the CoCT has the smallest.

3.5.2.1.1 Surfaced Road Network Condition

The overall condition of surfaced roads in the Western Cape has deteriorated slightly between 2006 and 2015. The deteriorating road condition required increased maintenance which has led to increased cost.

The historic surfaced road condition indicated by the Network Condition Number [19] (NCN) is presented in Figure 3-20 below. A drop in the NCN from 68 in 2006 to 64 in 2015 is evident. Also, the overall surfaced road condition is still below the benchmark NCN of 70.

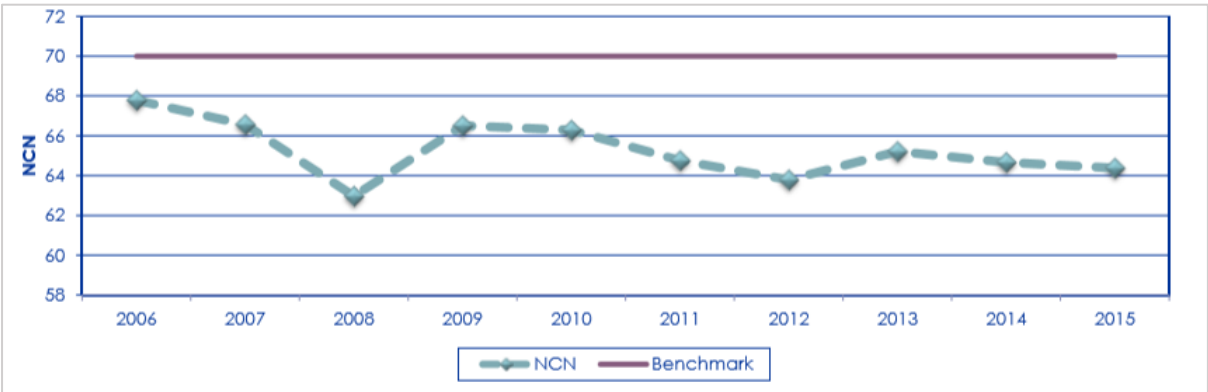

Figure 3-20: Historic overall Western Cape surfaced road condition *(Western Cape Department of Transport and Public Works, 2017)*

[19] The NCN is a measure of the visual condition of the road network. The NCN increases as the condition of a road network improves.

There was an increase (from 11.5% in 2011 to 12.8% in 2015) in the proportion of road length classified as being poor or very poor as presented in Figure 3-21.

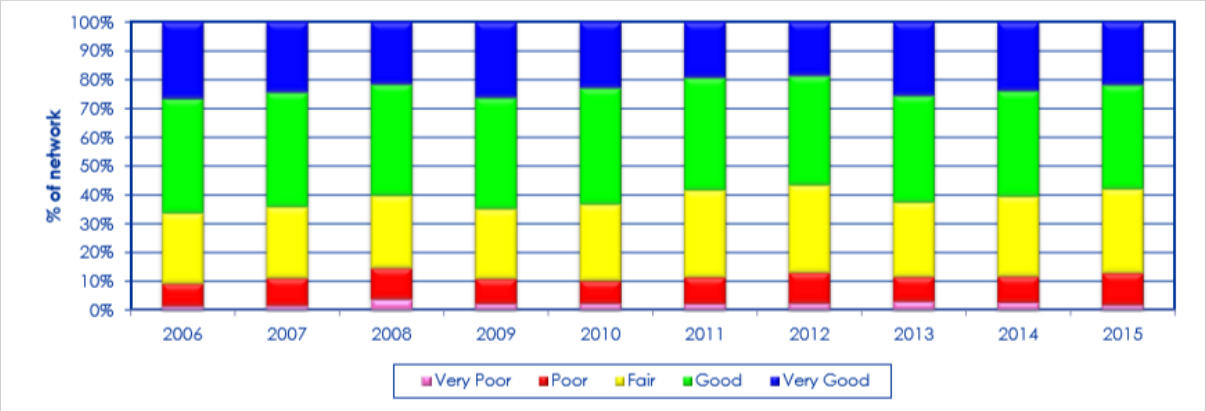

Figure 3-21: Distribution of Western Cape surfaced road condition *(Western Cape Department of Transport and Public Works, 2017)*

In 2015, the West Coast and Eden Districts had the highest proportions of poor and very poor surfaced roads, requiring expensive measures for rehabilitation.

RAMP (2017/18 to 2026/27) raises a concern regarding the pavement age for roads in the province. Of the surfaced road network in the province, 5,197 km or 76% of the network had a pavement age of more than 25 years in 2015. As a result, the number of surfaced roads in poor condition can be expected to increase. This will increase the need for funds for road rehabilitation.

3.5.2.2 Unsurfaced Road Network

The unsurfaced road network in the Western Cape is 25,305 km. The breakdown of the unsurfaced roads in the Province by district is provided in Figure 3-22.

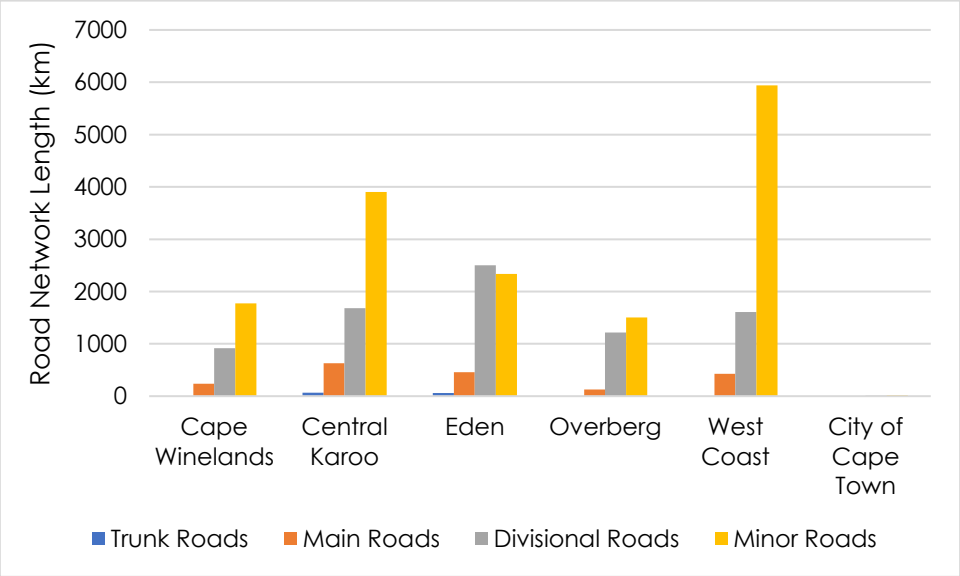

Figure 3-22: Western Cape unsurfaced road network break down *(Western Cape Department of Transport and Public Works, 2017)*

The West Coast region has the largest network of unsurfaced roads while the CoCT has the smallest network of gravel roads.

3.5.2.3 Unsurfaced Road Network Condition

The overall condition of unsurfaced roads in the Western Cape is poorer than that for surfaced roads. This is due to the priority given to the maintenance of surfaced roads. The poor condition of gravel roads primarily affects rural areas and may limit economic development and access to certain markets.

The historic unsurfaced road condition indicated by the Network Condition Number (NCN) is presented in Figure 3-23. A drop in the NCN from 54 in 2006 to 50 in 2015 is evident. Also, the overall surfaced road condition is still below the benchmark NCN of 60.

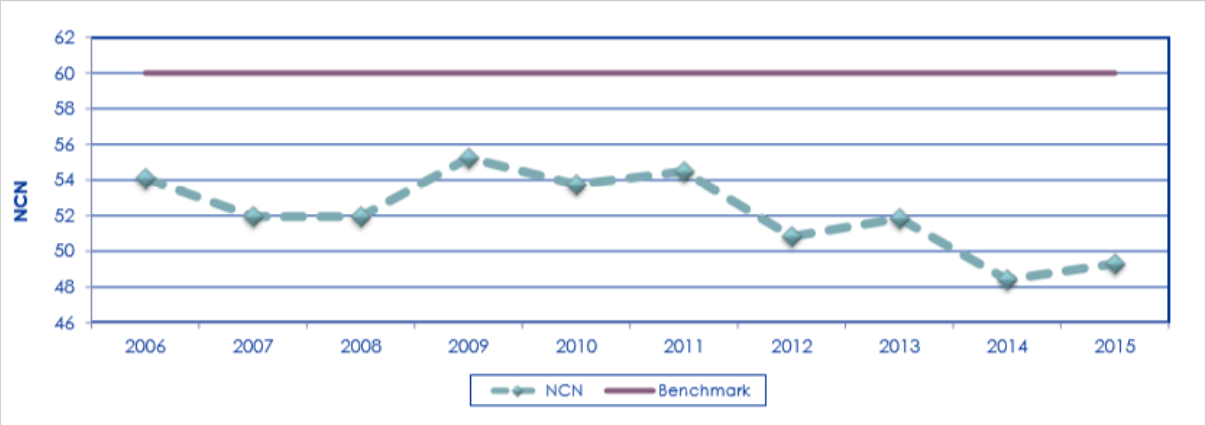

Figure 3-23: Historic overall Western Cape unsurfaced road condition *(Western Cape Department of Transport and Public Works, 2017)*

Between 2006 and 2015 there was an increase in the proportion of unsurfaced roads classified as being very poor. Also, the proportion of unsurfaced roads classified as being very good decreased between 2006 and 2015. The unsurfaced road condition distribution for the period 2006 to 2015 is presented in Figure 3-24.

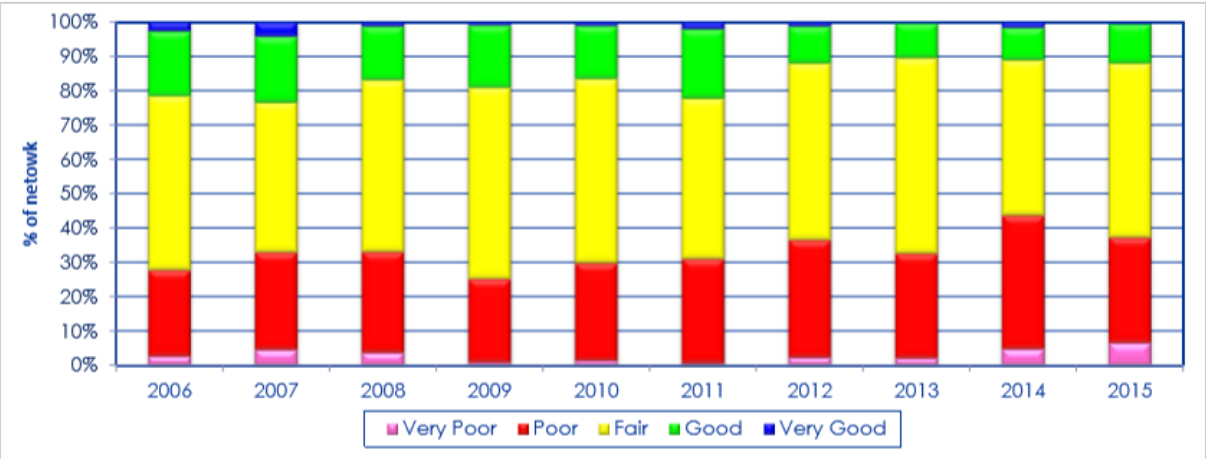

Figure 3-24: Distribution of Western Cape unsurfaced road condition *(Western Cape Department of Transport and Public Works, 2017)*

As of 2015, more than 70% of the unsurfaced road network had gravel wearing course thickness below 25 mm. This is much lower than the ideal thickness of 75 mm. The historic average gravel wearing course thickness for the Western Cape unsurfaced road network is presented in Figure 3-25.

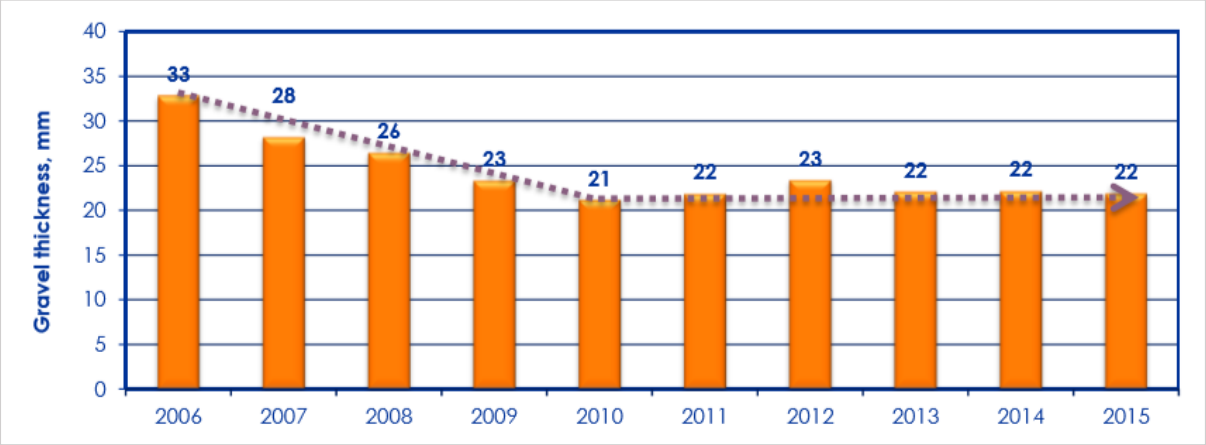

Figure 3-25: Historic Western Cape unsurfaced road average gravel thickness *(Western Cape Department of Transport and Public Works, 2017)*

The breakdown of unsurfaced road network gravel thickness is presented in Figure 3-26.

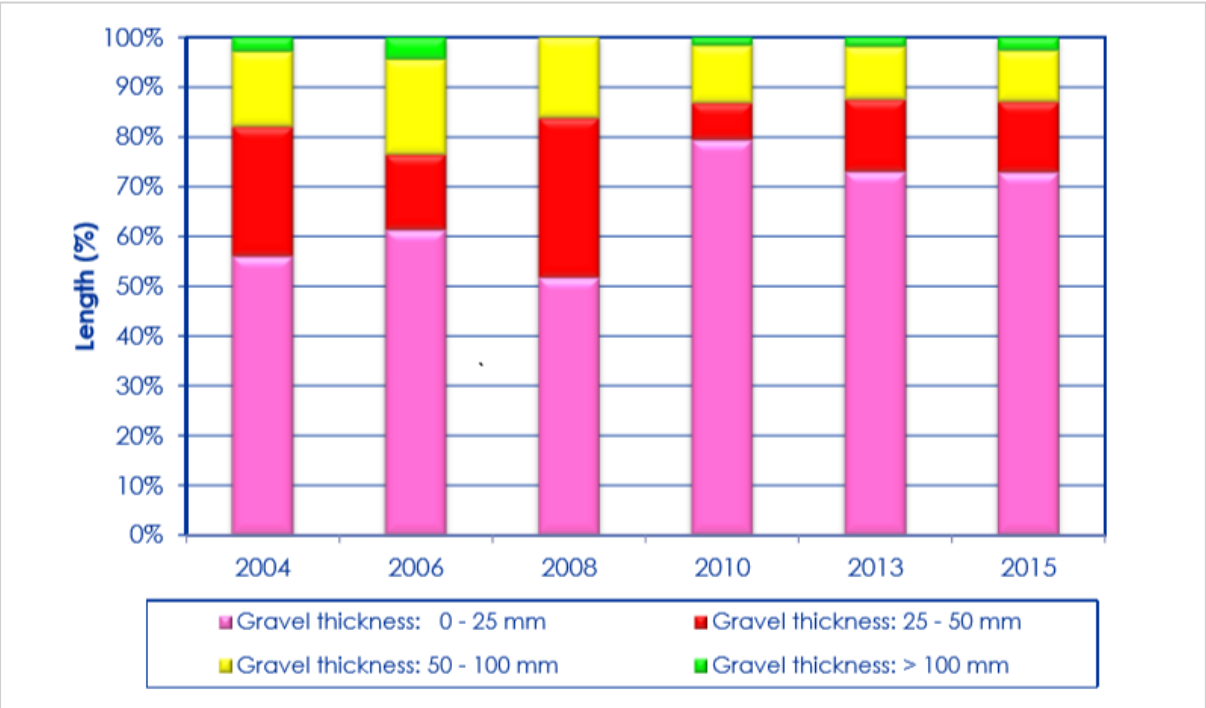

Figure 3-26: Gravel thickness distribution for Western Cape unsurfaced roads *(Western Cape Department of Transport and Public Works, 2017)*

One of the reasons cited in the RAMP (2017/18 to 2026/27) for the deterioration in unsurfaced road gravel thickness is the difficulty in obtaining environmental approvals to excavate suitable gravel material.

3.5.2.4 Road Maintenance Cost

The cost of road maintenance in the Western Cape has been increasing. The budget allocation for the Road Network Management Branch increased to meet increasing road maintenance costs, although the increase has been nullified by increases in unit maintenance costs. As a result, there is an ongoing trend of a budget shortfall, estimated at 14.3% of the roads maintenance budget in the RAMP (2017/18 to 2026/27). The budget shortfall has increased between the Fiscal Years (FY) 1999/00 and 2016/17 as illustrated in Figure 3-27.

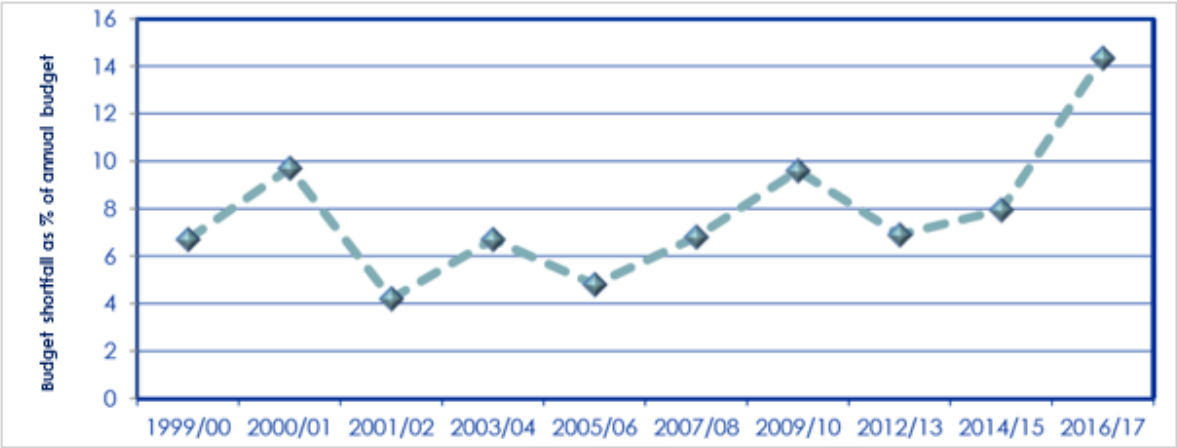

Figure 3-27: Western Cape road maintenance and upgrade budget shortfall as a percentage of the 5-Year Average Annual Budget *(Western Cape Department of Transport and Public Works, 2017)*

The RAMP (2017/18 to 2026/27) also indicates that there has been a substantial increase in the road maintenance and upgrade backlog. The backlog has increased from R 2 billion in FY 1999/00 to almost R 22 billion in FY 2016/17 with all costs adjusted to 2015 Rand values. The road maintenance and upgrade backlog costs are presented in Figure 3-28.

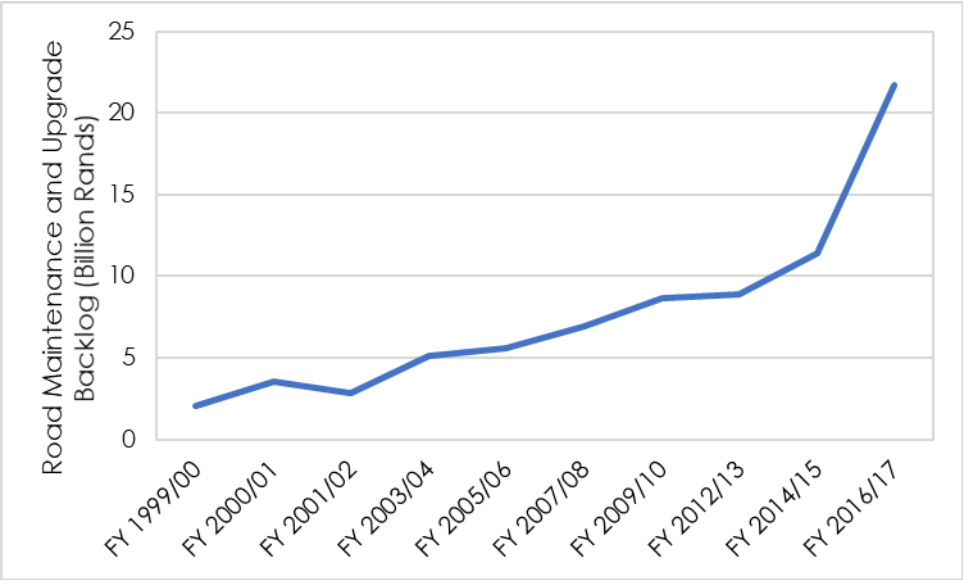

Figure 3-28: Western Cape road network maintenance and upgrade backlog adjusted to 2015 Rands *(Western Cape Department of Transport and Public Works, 2017)*

The steep increase in the backlog between FY 2014/15 and FY 2016/17 is attributed to a change in the methodology used to identify roads that require rehabilitation and an increase in both the road deterioration rate and unit maintenance cost.

3.5.2.5 Road Infrastructure Issues

Currently, a considerable proportion of rail-friendly cargo is transported via road, increasing the rate of infrastructure deterioration and the cost of road maintenance. The RAMP (2017/18 to 2026/27) indicates that there was a 42% increase in the vehicle-kilometres travelled on Western Cape roads between 2002 and 2015. Freight transport contributed considerably to this increase. Road deterioration is exacerbated by freight vehicle overloading, which occurs, in part, because of insufficient enforcement (see Section 3.6.2). The capacity to effectively manage and enforce rising freight volumes is limited, particularly in smaller municipalities. In addition, freight traffic volumes contribute to congestion issues in some areas (primarily built-up urban areas), requiring an effective and integrated approach to local freight management.

As discussed in depth in Section 3.4, the road freight industry does not make a direct contribution toward its externality costs, including compensation for road damage. This is the case for national, provincial and municipal roads in the Western Cape.

There is an appreciation of congestion issues related with the high volume of traffic from freight movement based on work that the DTPW Road Network Management and local authorities have done. However, sharing of this information among stakeholders and consolidation at provincial level needs to be considered. This is helpful in the development of cohesive provincial strategies for dealing with congestion, considering that activities in one part of the province can have impacts on other parts of the province. Such strategies may include improving traffic management in the short term e.g. enforcing vehicle weight limits in certain areas but may involve freight demand management measures in the long term e.g. appropriately locating regional industrial zones to mitigate congestion. The WCG DTPW Transport Hub being developed in the province and discussed in Section 3.8.5 may address some of the information sharing shortcomings.

The transport of abnormal loads [20] in the Western Cape is another activity that has a major impact on road infrastructure condition. This is because most roads are not necessarily designed to accommodate these loads. Recommendations regarding the transport of abnormal loads on public roads are given in Technical Recommendations for Highways (TRH) 11, Guidelines for Granting of Exemption Permits for the Conveyance of Abnormal Loads and other Events on Public Roads, compiled and updated by the DoT's Abnormal Loads Technical Committee (ALTC). These recommendations have been adopted by the Western Cape Government to develop policy, standards, permit conditions and to set the associated fees. The regulations require that abnormal load permits be administered by the Western Cape

[20] Abnormal loads are indivisible (for practical purposes) objects that, due to their dimensions and/or mass, cannot be transported on a vehicle or vehicles without exceeding the limitations of the dimensions or mass as described in the National Road Traffic Regulations, 2000.

Government, through the DTPW (Transport Regulation), in consultation with the local authorities, as appropriate. TRH 11 requires that the damage to road infrastructure caused by such a vehicle be recovered from the carrier and provides a guideline methodology to calculate the associated fees. The correct application of this methodology should ensure that the cost of road damage is recovered although some subjectivity exists, and errors sometimes occur in the calculation of the cost. As an example, incorrect classification of abnormal load vehicles can lead to inadequate cost recovery.

The Western Cape Government in the process of developing a Freight Route Framework, which will include an abnormal load and hazardous goods component. This is required to effectively plan for and manage the transport of abnormal loads, including the identification and implementation of infrastructure improvements to accommodate abnormal loads.

3.5.3 Seaport Infrastructure

The Western Cape is served by three (3) primary ports, namely:

- The Port of Saldanha, which handles predominately iron ore and crude oil;
- The Port of Cape Town, which handles a mixture of cargo (including agricultural products) and is the main container port terminal in the Western Cape; and
- The Port of Mossel Bay which handles predominately petroleum products.

The location of the 3 ports in the province is shown in Figure 3-29.

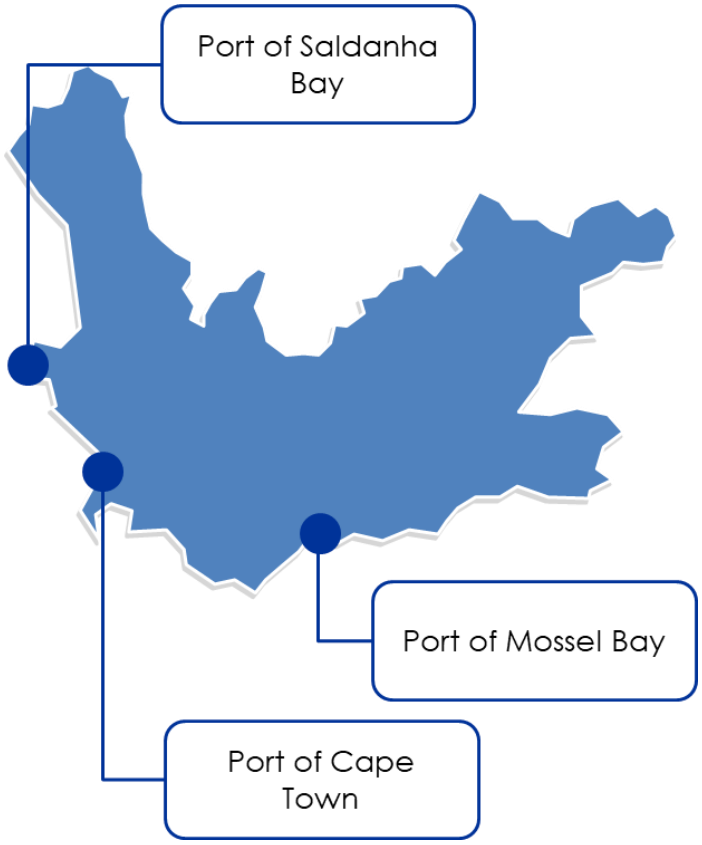

Figure 3-29: Western Cape ports

3.5.3.1 *Port of Cape Town*

The Port of Cape Town is the busiest of the three ports in the Western Cape and is second busiest port in South Africa, after Durban. The annual and average daily vessel calls for the ports, counted between the second quarter of 2012 and the second quarter of 2014 are shown in Figure 3-30.

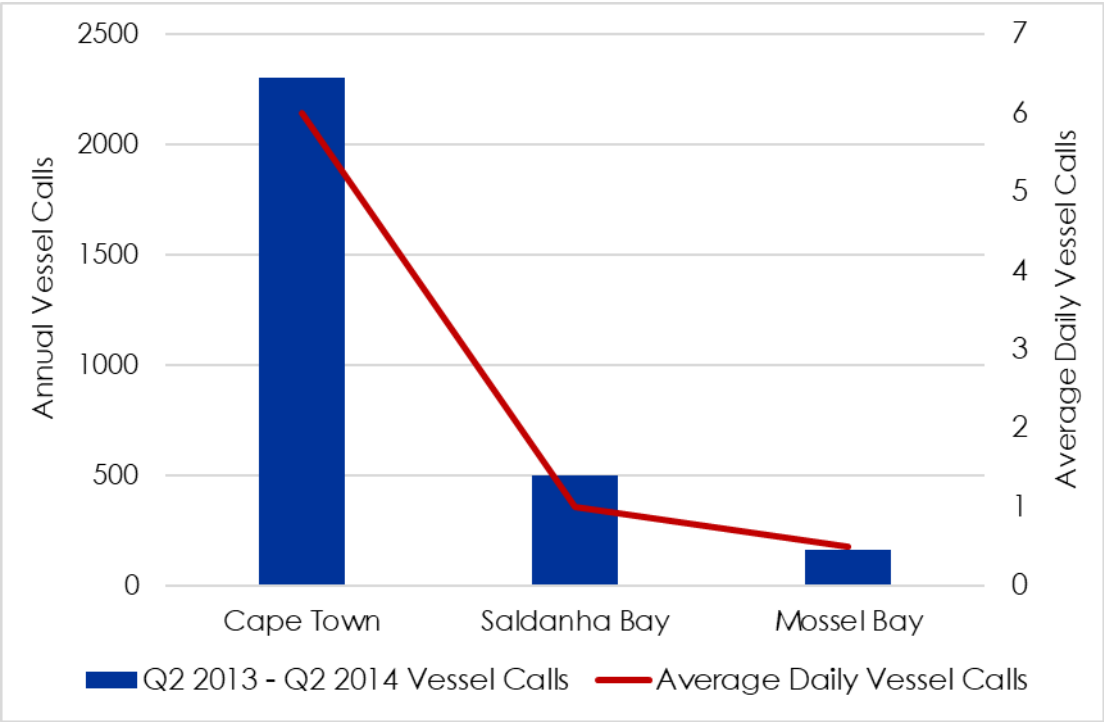

Figure 3-30: Western Cape ports vessel calls *(Transnet, 2015)*

The Port of Cape Town handles approximately 10 million tons of freight annually, made up of container, bulk and general cargo, with a percentage break down shown in Figure 3-31.

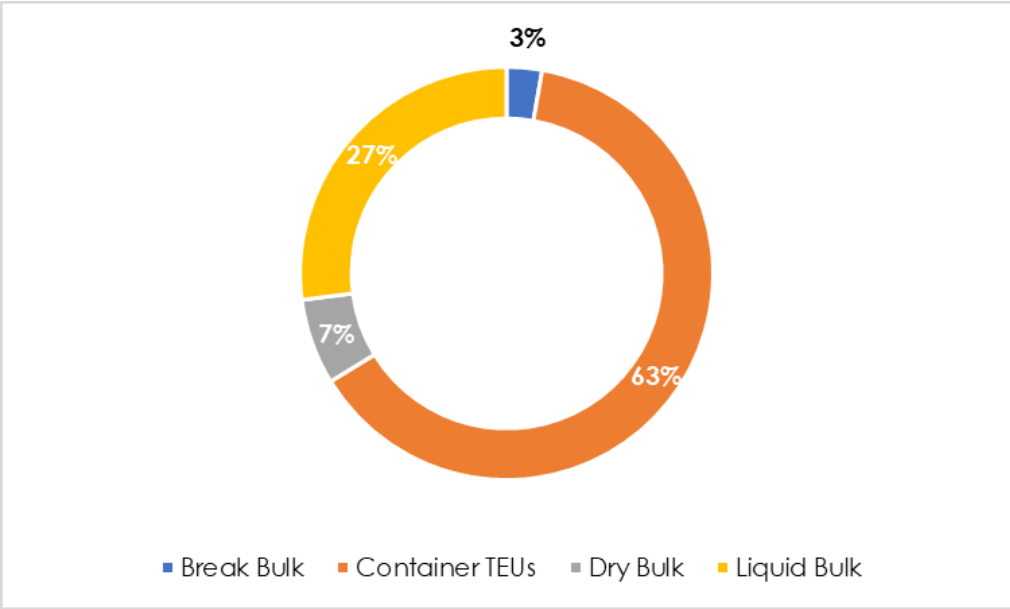

Figure 3-31: Port of Cape Town cargo breakdown *(Transnet, 2015)*

The Port of Cape Town is connected by rail via the Cape Corridor, the South Coast and the West Coast lines and by road connections that include the N1, the N2 and the N7. Forecasts by Transnet indicate that the volume of container cargo to the Port of Cape Town will grow to more than 200% of 2014 volumes by 2044 as shown in Figure 3-32.

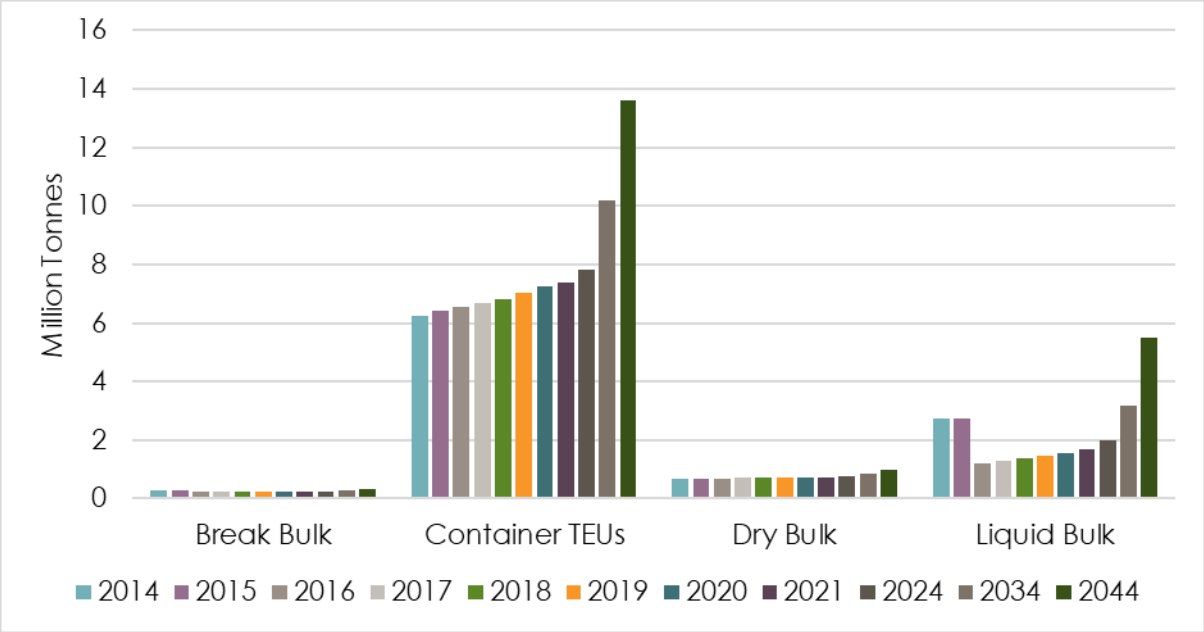

Figure 3-32: Port of Cape Town demand forecast *(Transnet, 2015)*

3.5.3.1.1 Port of Cape Town Challenges

The expected growth in volumes at the Port of Cape Town has its own challenges. The CoCT estimates that about 95% of cargo moved to and from the port is currently moved by road. As a result, congestion around the port and on road corridors leading to and from the port is a major issue, as is the impact of this traffic on road conditions and maintenance requirements. An upgraded entrance to the port has been provided on Marine Drive, to facilitate better freight movement onto the N1 and N2 freeways although its impact in alleviating congestion is yet to be fully assessed.

The 2016 Transnet National Ports Plan states that demand for container handling at the Port of Cape Town is expected to exceed installed capacity between 2019 and 2023. To increase the capacity, an upgrade to the container stacking area and handling equipment could be considered.

The Port of Cape Town has also been recording high turnaround times because of a combination of reasons. These reasons include:

- Increasingly adverse weather conditions – the port is experiencing high wind speeds more frequently than before. Offloading of cargo from vessels can only be conducted safely in winds of speeds below 80 km/hr. However, wind speeds of up to 120 km/hr are becoming more common and result in weather related downtime.

Other than winds, ocean currents are evidently becoming more severe and often lead to downtime.

- Inadequate infrastructure – the crane density at the Port of Cape Town is lower than that required to match increases that have occurred in the demand for container handling. In certain periods, particularly peak shipping seasons, this increases turnaround time considerably.

During engagement with industry representatives, concerns were raised that the high turnaround times may increase cost of transport and goods. Shipping companies may increase rates or impose congestion surcharges to offset the cost of idle capacity. In addition, high turnaround time has a knock-on effect on the road freight sector. Trucks spend more time waiting for cargo which adds cost on operators who may also pass this cost on, increasing cost of transport and goods. Also, waiting trucks are a safety risks and a source of congestion in roads leading to or around the port.

3.5.3.1.2 Belcon Intermodal Facility Expansion

Sustainable and effective access to the Port of Cape Town will require the promotion of alternatives to road freight for direct access. To this end, Transnet has embarked on an initiative to increase the utilisation of the Belcon intermodal terminal facility. The terminal is located on property owned by Transnet and has capacity of 56,000 TEUs per year, with potential to upgrade to 756,000 TEUs per year by 2034. The main goals of the Belcon initiative are:

- To extend terminal capacity to meet forecasted growth and demand; and
- To provide a multimodal solution for improved transport logistics chain reliability.

The expected benefits of the initiative are:

- Movement of a significant percentage of cargo from road to rail;
- Reducing traffic congestion at and around the Port of Cape Town. However, there are concerns that this approach may transfer traffic to the area around the Belcon facility. At the time of completing the status quo, the project team could not find evidence of any traffic studies to determine the traffic impact of this initiative at the Port or at Belcon. Transnet indicated that such a study was conducted in the past although an up to date study may be required;
- Eliminating shipping process bottlenecks;
- Improved operational efficiency of the port;
- Improved port terminal space management; and
- Road safety risk reduction.

A pilot project was launched in 2016 for a rail shuttle service to run between Belcon and the port. In February 2017, the first shuttle ran with 10 containers. This number has since increased to approximately 100 containers per shuttle trip. The services provided have expanded to include:

- Long-term storage facilities for shipping equipment e.g. containers that are used seasonally. This has freed up capacity at the port;
- Depots/Warehouses for shipping companies, allowing consolidation to be done away from the port, freeing up capacity at the port and reducing the number of trucks that are driven to the port. Trucking companies have found this valuable as it saves them considerable time and mileage to the port;
- Facilities (e.g. power supply) for refrigerated containers – up to 100 power points had been provided as of July 2017.

Transnet has also initiated an operation where semi-trailers can be hauled on rail tracks to and from the port. Transnet is working with a company which owns the patented bimodal technology being used. The two companies signed a twenty-year agreement in 2016. The bimodal system is a container semi-trailer chassis with normal road wheels and a rail bogie [21] for use on rail tracks. The technology allows semi-trailers to be hauled on train tracks without the need to lift them onto flat beds and eliminates the need to offload containers. The bimodal technology is discussed in greater detail in Section 3.7.3.1.

There is ongoing private sector interest in the Belcon project, with companies such as Shoprite making use of the services offered in the pilot project and providing user input in the development of the facility. According to Transnet, other companies that are major participants are Distell and Pick 'n Pay clothing. Interest has primarily come from South African companies using coastal shipping to move freight to West African markets.

As the freight volumes flowing through the port increase over time, Belcon may need to be supplemented by additional facilities. Transnet has completed studies to identify possible sites for additional intermodal facilities. However, no plans are currently in place for the development of these sites.

While the Belcon facility has several benefits, there are concerns that the cost to Transnet of moving freight using the facility is high. This may partly be a result of the double handling that is involved or may simply be because the facility is still scaling up. These costs may decrease when the facility is fully established and when sufficient scale has been developed.

3.5.3.2 Port of Saldanha

In terms of movement of cargo in the Western Cape, the Port of Saldanha is second most important. The Port of Saldanha handled approximately 67 million tons of cargo per annum in 2015. Export iron ore is the primary cargo type, with quantities of 60 million tons per annum in 2015. The cargo breakdown for the port of Saldanha is presented in Figure 3-33.

[21] Rail vehicle undercarriage where wheels are mounted.

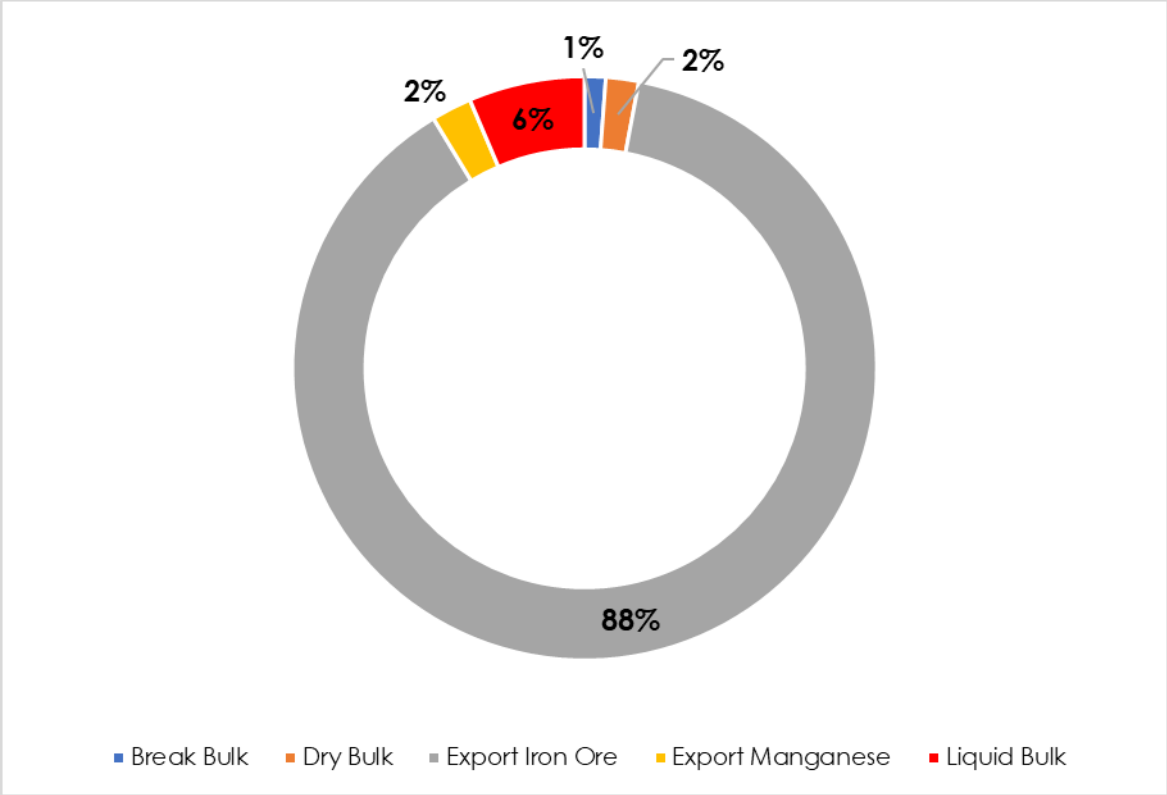

Figure 3-33: Port of Saldanha cargo breakdown *(Transnet, 2015)*

The demand forecast for cargo movement at the port of Saldanha is shown in Figure 3-34.

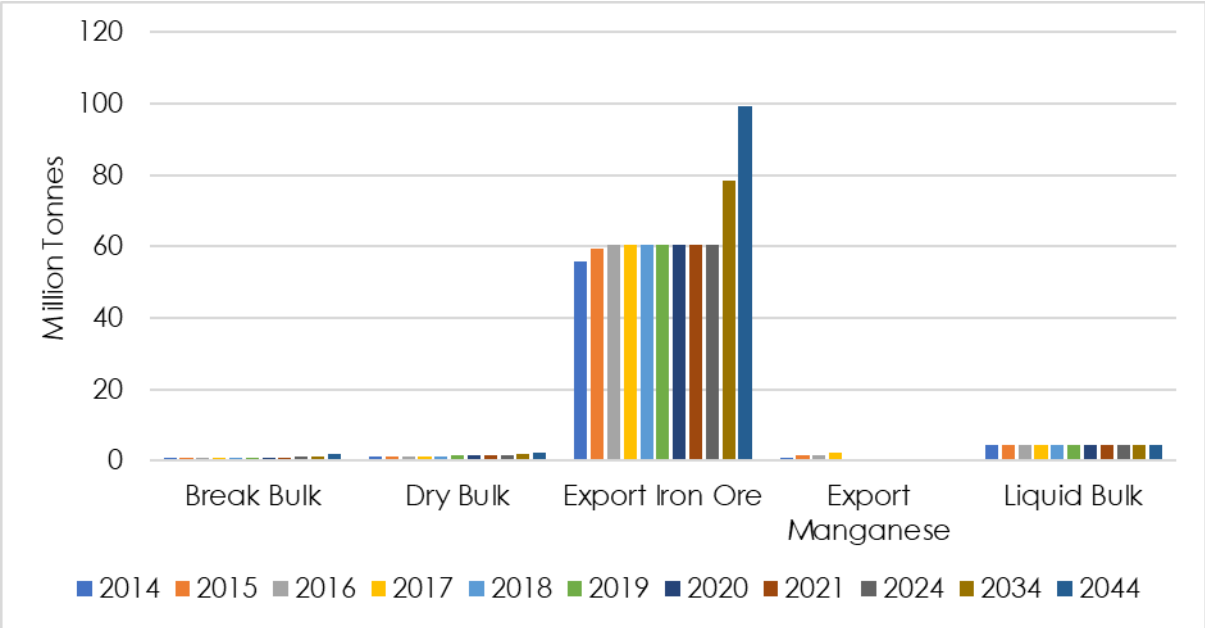

Figure 3-34: Port of Saldanha demand forecast *(Transnet, 2015)*

The Port of Saldanha remains focused on increasing its capacity for iron ore exports. The demand forecast in the 2016 National Ports Plan indicates that the iron ore terminal is currently operating at capacity. According to the plan, two additional berths and increased stockpile capacity are planned within the short and medium

term. In addition, the port has the potential to expand its waterside and landside infrastructure to support the proposed Industrial Development Zone (IDZ).

The Port of Saldanha, however, occupies an area of considerable ecological diversity and is situated within a complex socio-economic context. As a result, careful management of activities and careful planning of future infrastructure development is required.

3.5.3.2.1 Ports of Saldanha and Cape Town Twin-Port Strategy

A twin-port set up between Port of Saldanha and Port of Cape Town has been proposed. This would involve some interchangeability of certain cargo movement tasks between the two ports. The major benefit for such an arrangement would be in complementing capacity at the two ports, introducing potential to move some demand from the Port of Cape Town to Port of Saldanha and vice versa. According to Transnet some basic set-up exists where manganese that would otherwise be exported through the Port of Saldanha can be moved to the Port of Cape Town as a fall-back measure. However, there is no known plan under consideration to expand this to significantly cover other forms of freight. The key issues that Transnet has raised as potential reasons such an arrangement would be less feasible include:

- The intended purposes of each of the two ports: As noted, the Port of Cape Town is the primarily container port in the province, while the Port of Saldanha was from the onset intended for dry-bulk cargo in the province. As such, enabling interchangeable use of the two ports will likely require significant capital investment;
- Poor connectivity between the two ports: There is no direct rail link between the two ports and capacity of existing indirect links may not adequately cater for increased traffic between the two ports; and
- Land use implications for expanding the port of Saldanha's capacity to cater for excess cargo from the port of Cape Town. Inland ports or intermodal facilities may be required to expand capacity, for which land acquisition may be necessary.

Transnet's MDS and Rail Development Plan currently do not include any planned projects for the twin-port setup. Similarly, Transnet's Port Development Plan does not make mention of work relating to development of the twin-port set-up.

3.5.4 Port of Mossel Bay

The Port of Mossel Bay primarily caters for the local fishing fleet and provides facilities for recreational boaters. It has very limited freight handling capacity. About 1,8 million kilolitres of liquid bulk is handled per year through the Central Buoy Mooring (CBM) and Single Point Mooring (SPM). These are mostly petroleum products destined for the PetroSA refinery outside Mossel Bay.

Transnet's 2015 Port Development Plan notes that the port's current infrastructure capacity is sufficient to meet cargo demand forecasts over the next 30 years.

3.5.5 Pipeline Infrastructure

Pipelines play an integral part in the transport of bulk liquids and gas. However, the extent to which the mode contributes to the movement of freight in the Western Cape is limited and primarily involves local distribution of commodities such as petroleum. The only significant pipelines in the province are the Chevron owned lines in Milnerton, Cape Town and Petro SA's seven pipelines which form part of its Gas-To-Liquids (GTL) refinery just outside of Mossel Bay. Although volumes moved in pipelines in the province are relatively small, especially in comparison with other provinces such as Kwazulu-Natal (KZN), pipelines do have the potential to absorb appropriate road freight. For example, pipelines can be particularly useful for local distribution of liquids and gases. A pipeline under consideration for such an application is the jet-fuel line from Chevron refinery to CTIA as discussed in Section 3.4.4. The project team could not find information on any other significant pipeline projects in the Western Cape during the status quo review.

3.5.6 Airport Infrastructure

Airport development in the Western Cape is currently focussed on passenger transport. As discussed in Section 3.4.6, the bulk of freight currently moved by air in South Africa and in the Western Cape is transported on passenger flights and, therefore, infrastructure provision for air passenger transport has an impact on the movement of air freight. The wider the passenger flight offering, the easier it is to transport appropriate cargo by air freight, as more options and greater capacity becomes available to cater for such needs. Most of the air cargo handled in the Western Cape goes through CTIA and is predominantly made up of agricultural exports.

Current airport capacity in the Western Cape is adequate for existing needs. There are efforts underway to increase the utilisation of existing capacity by developing new passenger flight routes to Cape Town through initiatives such as the Cape Town Air Access initiative (see Section 3.4.6). In the interim, plans are in place to expand capacity at CTIA to meet future needs (Future Cape Town, 2017). The planned projects include:

- A new, realigned runway and associated taxiways, costing R3,18 billion scheduled to start in July 2017 and to be completed by December 2021;
- A new domestic arrivals terminal, for which construction is expected to start in March 2018 and scheduled to be completed in April 2020;
- Construction of Terminal 2, planned to start in March 2019, and to be completed in September 2022; and
- New boarding gates and an international departure lounge, costing R100 million, due to begin in March 2018 and to be completed by June 2019.

ACSA, together with regional partners, is currently exploring options to develop an aerotropolis around the Cape Town International Airport (Accelerate Cape Town, 2015). Initiatives of this kind, where economic activity and infrastructure is centred

around an airport, have emerged globally at major international airports including Dubai International, Amsterdam Schiphol, and Singapore Changi. The development of the Cape Town aerotropolis is still in the early stages. However, provincial and local authorities in the Western Cape have a common understanding of the value proposition of the aerotropolis concept and are engaging ACSA on the ways to develop the aerotropolis concept around CTIA. The aerotropolis concept is primarily being considered from an economic opportunity perspective, although more activity at CTIA may have positive spin-offs for the broader freight network. More air freight service providers may be attracted to CTIA, encouraging more businesses to use air freight for appropriate cargo.

3.5.7 Implications for Strategy Formulation

A freight infrastructure network that functions well, has sufficient capacity and is reliable, is a critical requirement for effective freight movement. The condition and capacity of freight transport infrastructure directly influences other focus areas such a modal shift.

Correspondingly, other focus areas have a direct impact on freight infrastructure, for example, managing or reducing freight demand can reduce or postpone the investment required to increase infrastructure capacity.

There is a need to minimise the impact of freight on road deterioration and the cost of road maintenance through initiatives such as modal shift and enforcement measures that prevent overloading.

Furthermore, the condition of roads in rural areas is generally considered to be worse than that of roads in urban centres. There may be a need to improve rural road infrastructure and improve access in high growth potential areas.

The capacity of the freight network in the province may be optimised through improving connectivity among modes, particularly ports, roads and rail. Such connectivity requires appropriate intermodal facilities. Identification of locations where such facilities are required, as well as the approach for developing such facilities, will be an important consideration of the Strategy.

As with other focus areas, the need to develop a better understanding of current and future multi-modal freight transport demand is key to planning infrastructure. This can be achieved through a regularly updated freight demand model. Such an understanding can provide insights into current and future infrastructure challenges and help to shape the integrated transport and freight management responses to these.

Besides the provincial road network and the weighbridges, much of the freight transport infrastructure in the Western Cape falls outside of the DTPW's direct influence. Therefore, most of the strategic infrastructure interventions required to improve the freight network will need coordination with other stakeholders such as National Government, Transnet, ACSA, the City of Cape Town, local municipalities and the private sector. This further highlights the importance of the planning,

coordination and institutional arrangements focus area as a key foundation for an effective freight strategy in the Western Cape.

3.6 Status quo of Western Cape Freight Traffic Management

3.6.1 Western Cape Traffic Enforcement Capacity

The capacity of the road traffic management authorities in the Western Cape is greatly impacted by the existing modal imbalance. As discussed in Section 3.4, there has been a significant increase in road freight traffic over the last three decades following the deregulation of the road freight industry in 1988, and as a result, a great deal of pressure has been placed on road traffic enforcement agencies and entities. Enforcement measures such as existing overloading control systems (in the form of weighbridges) are struggling to cope with the high road traffic volumes. Law enforcement capacity cannot keep up with growth in road freight traffic. These challenges are not unique to the Western Cape but are consistent with challenges experiences in other provinces in South Africa.

One of the negative effects of road freight dominance and the resulting traffic management challenges has been a comparatively high number of accidents and fatalities linked to heavy vehicle movements as discussed below.

3.6.1.1 Western Cape Freight Crash Statistics

A 2007 study of road accidents for South Africa and eight (8) other countries showed that the country had a high number of freight transport related road fatalities. Data from the report is presented in Figure 3-35 and shows that South Africa's heavy vehicle fatalities per 100 million kilometres travelled were nearly four (4) times the average of the nine (9) countries in the study.

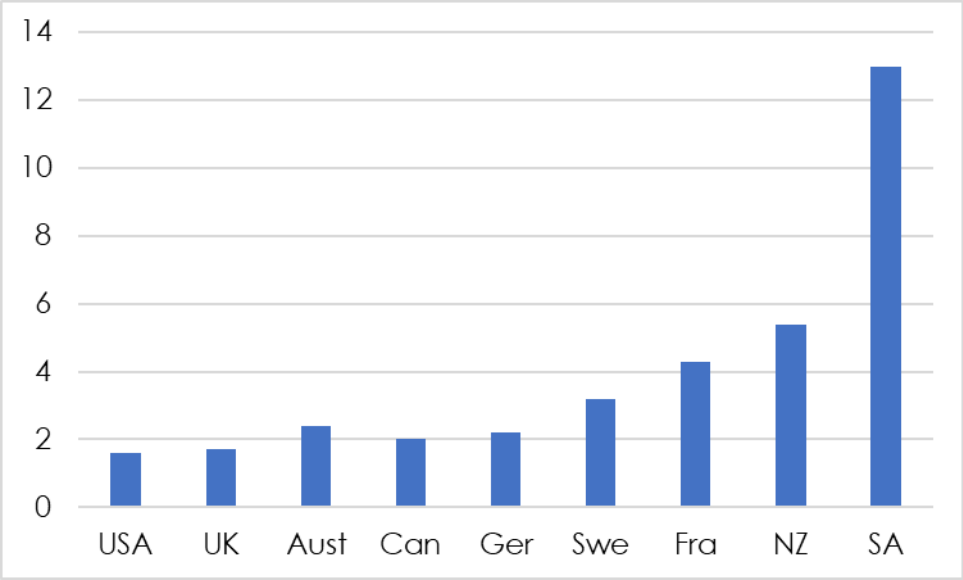

Figure 3-35: Comparison of heavy vehicle related fatalities per 100 million kilometres (2002) *(Moore, 2007)*

The study does not provide a breakdown of this data per province, although it is unlikely that the Western Cape's statistics were significantly better than those for the

rest of South Africa. To develop an understanding of the Western Cape's performance, an estimation of the province's heavy vehicle related fatalities per 100 million kilometres was made using sources of data available. The calculated figure is a rough estimate, based on the best information available and a more accurate figure requires more data. The estimate is presented in Table 3-6 below:

Table 3-6: Indicative Western Cape heavy vehicle fatalities per 100 million kilometres

Indicator	Value
Number of heavy vehicle fatalities in the Cape Metro per year	29 [22]
Number of heavy vehicle fatalities in the greater Western Cape per year	20 [23]
Heavy vehicle kilometres (in millions) travelled in the Western Cape per year	285 [24]
Estimated heavy vehicle fatalities per 100 million kilometres	16

The estimated number of heavy vehicle fatalities per 100 million kilometres for the Western Cape is comparable to that for the rest of South Africa, presented in Figure 3-35. The slightly higher number could be explained by the fact that the distance data used in calculating the estimate is mainly for the freeway sections of the Western Cape road network. If the movement of freight on other roads is included, the vehicle kilometres travelled would be higher, which reduces the estimated heavy vehicle fatalities per 100 million kilometres to within the value quoted in Figure 3-35. The confirms that the Western Cape heavy vehicle crash statistics are comparable to those for the rest of South Africa. Interventions are required to reduce heavy vehicle crashes in the province.

3.6.2 Western Cape Overload Control

3.6.2.1 Overload Control Operations

The WCG is mandated with the control of overloading of freight vehicles, and the Provincial Overload Control System (OCS) is relatively well established. The OCS is made up of a network of weighbridges and enforcement officers.

In terms of operations, freight vehicles are expected to stop at weighbridges during operational hours, except in the case where Weight-In-Motion (WIM) technology is in place. WIM is described in more detail in Section 3.6.2.2.1 below. Despite these control systems, there are still a sizeable number of overloading incidents recorded in the

[22] Data sourced from the City of Cape Town heavy vehicle fatality statistics for May 2014 to May 2016
[23] Data sourced from the DTPW heavy vehicle fatality statistics
[24] Estimated using data from the Cape Town Freeway Management System Operations Report for December 2017

Western Cape on an annual basis, with many incidences of vehicles avoiding the overload control enforcement system.

The effectiveness of the overloading control system is dependent on the following three factors [25]:

- The probability of being apprehended;
- The severity of the penalty; and
- The likelihood of prosecution for overloading.

Currently, the probability of being apprehended is dependent on enforcement presence and the ease of avoidance of the regulation/enforcement operations. Due to inadequate capacity at weighbridges e.g. for 24-hour operation, the probability of evaders getting apprehended is relatively low.

When a vehicle is found to be overloaded or if the driver fails to adhere to a command from a traffic officer or electronic traffic sign instruction to divert to a weighbridge, a fine is imposed. The fine depends on the degree of overloading (or other infringements); however, the penalties for overloading are generally perceived to be quite low, so the failure to comply carries a relatively low economic risk for truck operators. The risk of prosecution is not high due to a weak legal framework and low capacity for prosecution.

Because of the combination of a minimum level of enforcement in many areas, low levels of fines and limited success with prosecution in the courts, the benefits for transport operators who take the risk of overloading may outweigh the potential penalties for overloading.

3.6.2.2 Overload Control Infrastructure and Systems

During the status quo assessment, there were nine (9) weighbridges in the Western Cape, at the following locations, illustrated in Figure 3-36:

- Joostenbergvlakte, Rawsonville and Beaufort West on the N1;
- Somerset West and Swellendam on the N2; and
- Vissershok, Moorreesburg, Vredenburg and Klawer on the N7.

The metropolitan weighbridges at Joostenbergvlakte, Vissershok and Somerset West as well as the weighbridge at Beaufort West operated 24 hours a day for seven (7) days a week. The rest of the weighbridges operated in two eight-hour shifts per day for five days per week.

[25] Factors based on information from the National Transport Master Plan (NATMAP 2050)

Figure 3-36: Provincial weighbridge locations

The Vredenburg weighbridge was closed and operations ceased on the 30th of November 2017. The intersection on the R27 connecting to the Vredenburg weighbridge road (TR85/1) is going to be replaced by an interchange that will impede weighbridge operations. Construction of the interchange will commence as soon as the site is vacated and includes dismantling of the weighbridge infrastructure.

A new weighbridge will be opened at Gouda. The proposal was made partly to improve overload control on the R46 between Gouda and Ceres. This route is commonly used to avoid existing weighbridges. The Gouda weighbridge will operate along the same principles as the one at Beaufort West. All heavy vehicles will be screened using WIM technology, with detailed weighing done on those vehicles that fail the initial screening.

3.6.2.2.1 Weigh-In-Motion (WIM) Technology

The WIM technology is intended to supplement static weighbridges, acting as a screening stage, which either alerts the driver of the need to pull over for more accurate weighing, or allows vehicles to pass if the carried loads are in the acceptable weight range. In the Western Cape, the only weighbridge with the WIM technology is currently Beaufort West, which has been in place since 2007. There are plans to install WIM technology at the soon to be built Gouda weighbridge.

In general, enforcement follow-up related to the use of this technology still requires improvement to ensure that incidents of overloading that are picked up by WIM result in violators paying the appropriate fines.

3.6.2.2.2 Average Speed of Distance and Automated Number Plate Recognition

Average Speed over Distance (ASOD) and Automatic Number Plate Recognition (ANPR) cameras are used along a few key routes to help improve enforcement effectiveness. However, the OCS is not yet linked to ASOD and ANPR (see Section 3.6.2.2). Improved enforcement system integration is planned as part of the WCG DTPW Transport Hub project (see Section 3.8.5). The existing technology is owned and operated by either the DTPW or City of Cape as listed below:

- Owned and operated by DTPW:
    - R27 West Coast Road, Ganzekraal to Buffelsdrift;
    - N1 Touws River to Karoo National Park;
    - N1 Beaufort West to three Sisters;
    - R61 Beaufort West to Aberdeen; and
    - N2 Sir Lowry's Pass to Houw Hoek.
- Owned and operated by City of Cape Town
    - N2 Nelson Mandela Boulevard to Settler's Way;
    - M3 Philip Kgosana Drive to Ladies Mile; and
    - M5 Kromboom to Ottery.

The DTPW uses ASOD and ANPR for active Provincial Traffic Law Enforcement operations. These technologies compliment officers deployed along road sections. Data collected from these technologies is used to identify unlicensed/unroadworthy vehicles and to monitor speeding violations.

More detail on ASOD and ANPR as a technology can be found in Section 3.7.1.2.

3.6.2.3 Road-based Freight Overloading Trends

Overall freight overloading trends in the Western Cape show a reduction in the total percentage of vehicles overloaded since 2008. The percentage of vehicles overloaded within the 5% warning range has also decreased but stabilised to around 10% over the last few years. The Road Asset Management Plan (2017/18) states that

some operators may be engaging in intentional overloading within the 5% limit and suggests a review of the limit to mitigate this.

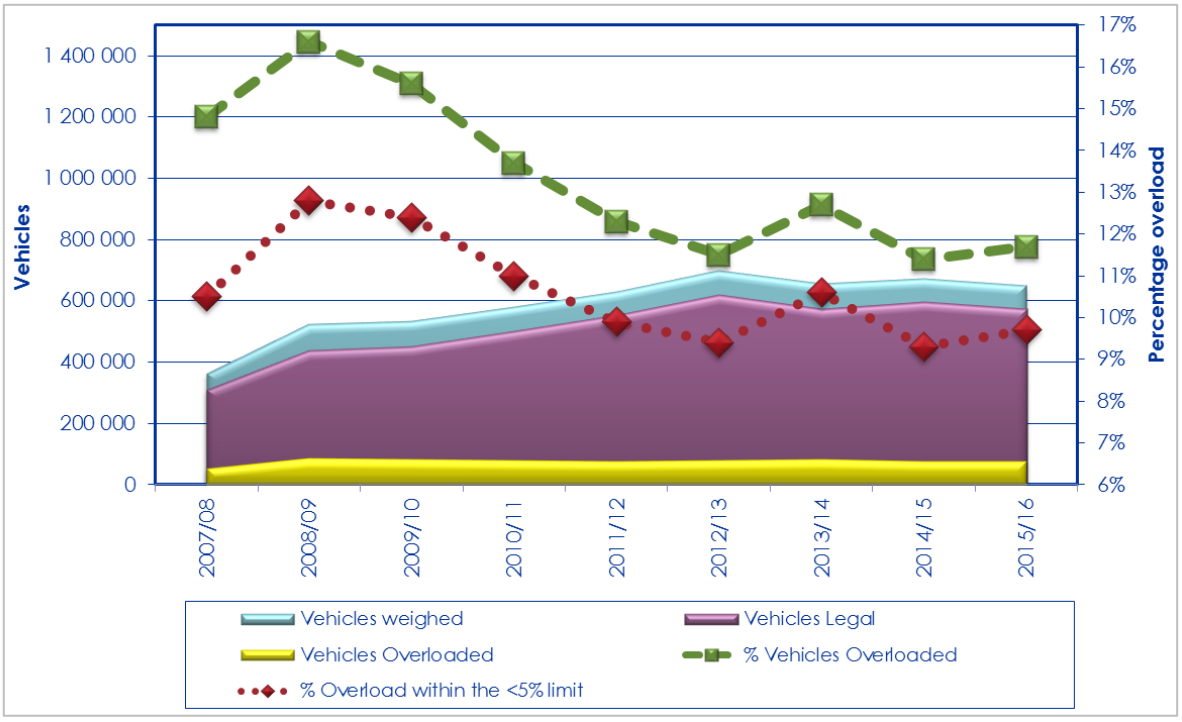

Figure 3-37: Historical trend of vehicles weighed *(Western Cape Department of Transport and Public Works, 2017)*

Figure 3-38 shows overload trends at the busiest weighbridges in the Western Cape for 2014.

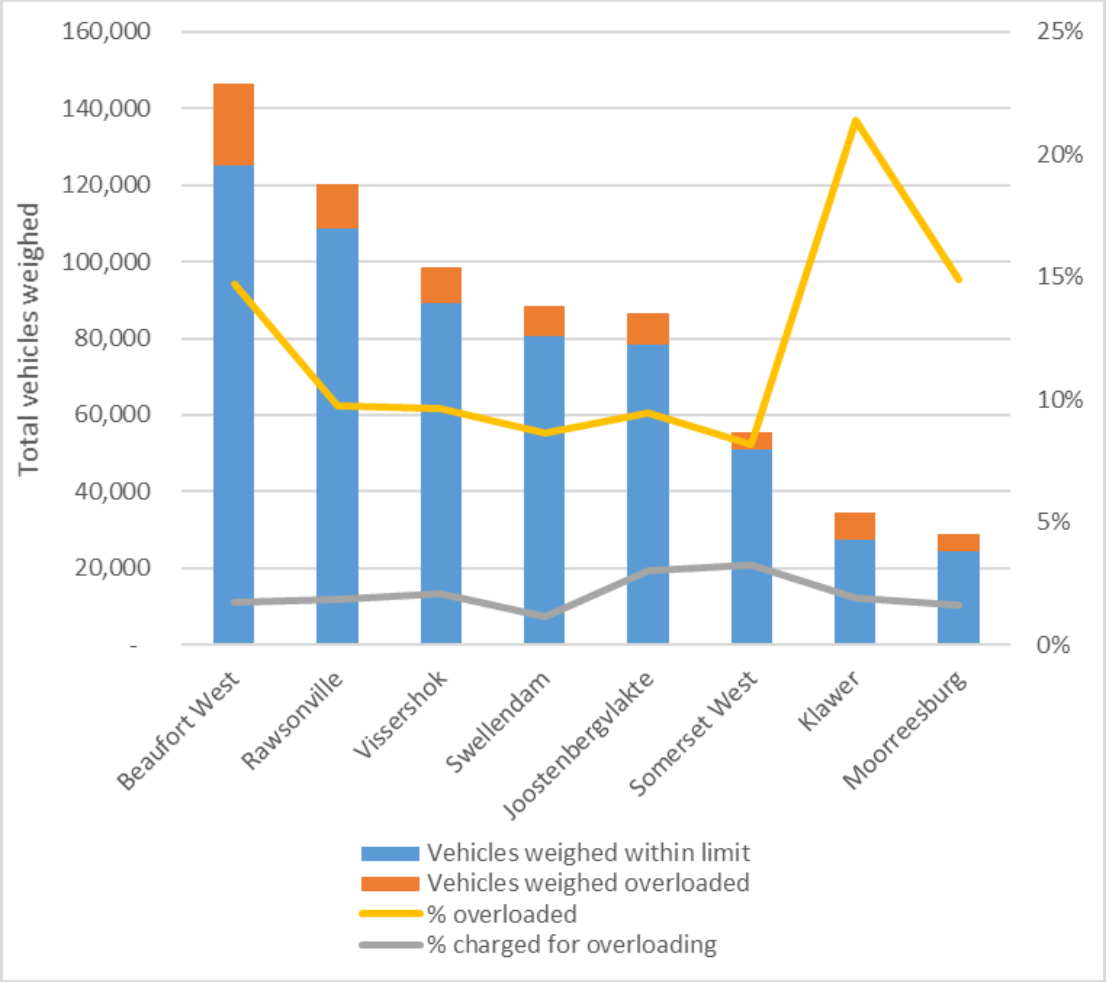

Figure 3-38: Overloading figures per weighbridge *(National Department of Transport)*

Of all the locations, Klawer and Moorreesburg had the highest percentage of vehicles overloaded. There was a significant difference between the percentage of vehicles overloaded and the percentage of vehicles charged for overloading. This reflects the large number of vehicles that are overloaded within the 5% limit for which no fines are issued.

According to the CSIR (2010), there was a significant decrease in average overloading per vehicle in the Western Cape over the period 1995-2009. Average overloading per vehicle decreased from 2,700 kg to just over 500 kg in this period as shown in Figure 3-39.

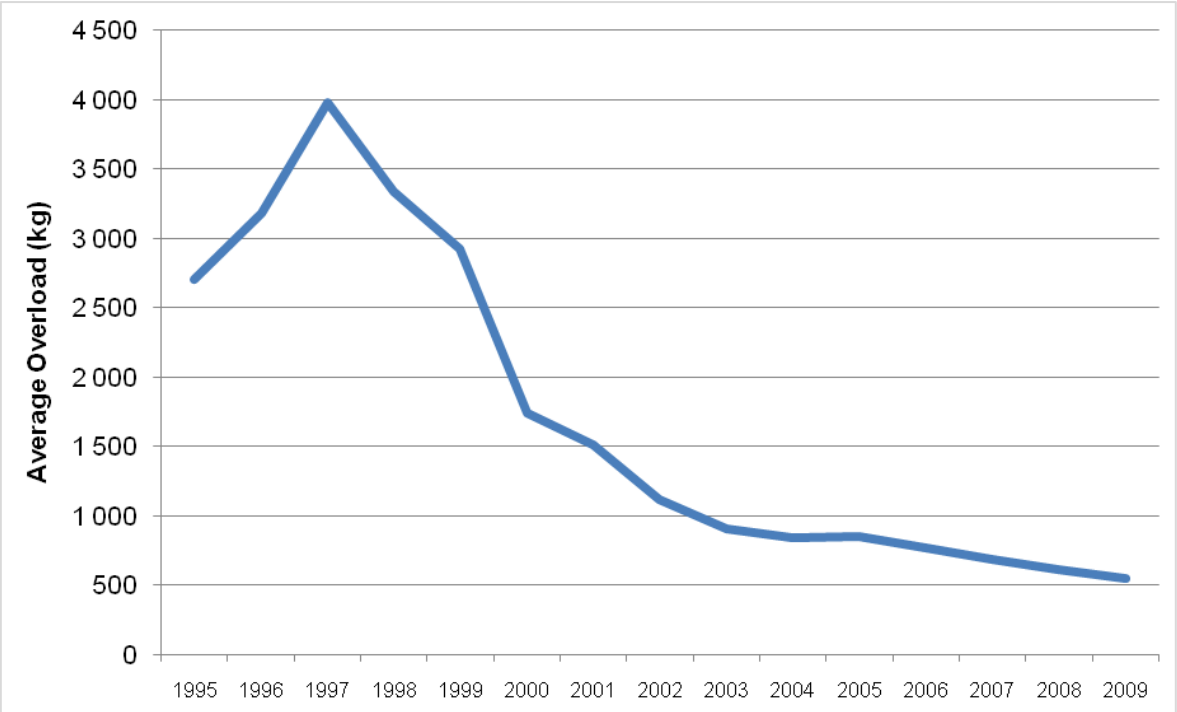

Figure 3-39 Average overload weight per annum- Western Cape Province 1995-2009 *(CSIR, 2010)*

The National Freight Databank shows an average overload per vehicle of around 543 kg in 2014 for the Western Cape, as presented in Figure 3-40.

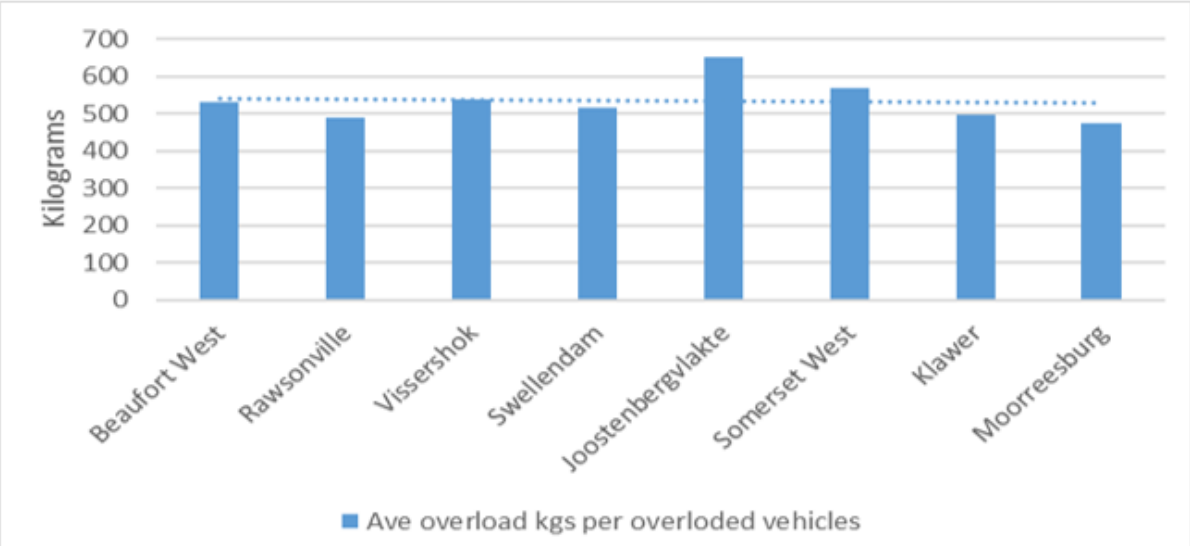

Figure 3-40: Average overload per overloaded vehicle in the Western Cape for 2014 *(National Department of Transport)*

According to the CSIR, the decrease in overloading per vehicle is attributable to more extensive coverage of overload control activities. The CSIR report provides a comparison of all the provinces in South Africa and shows that the Western Cape weighed the highest number of vehicles over the period 2003 to 2010.

However, since most overload control management in the form of weighbridges occurs on national roads, the report notes that average overload on roads that are

not monitored with weighbridges may not be following the same trend. From the Western Cape Government's point of view, this is a concern since most of the provincial roads fall under this category and may therefore incur excessive damage from overloaded vehicles.

Although there has been a significant reduction in the percentage of overloaded vehicles and the average overload weight, there are still reportedly many vehicles not being weighed for the following reason:

- More than half the weighbridges operate for only 16 hours a day, five (5) days a week, and two (2) weekends a month. Severely overloaded or unregistered vehicles can therefore pass at night when weighbridge stations are not open.

In 2015, the Western Cape Government, DTPW Traffic Management, initiated roadside screening on a selection of known alternative routes. The screening is done using portable WIM pads/mats that provide individual axle loads and the gross mass, generally with a 90 to 95 percent accuracy. Overloaded vehicles are escorted to the closest static weighbridge for more accurate weighing and initiation of the penalty process. The Western Cape pilot roadside screening was conducted on the R46 with the aim of intercepting heavy vehicles that bypassed weighbridges by using the R46 between Gouda and Ceres. Intercepted vehicles were escorted to the Rawsonville weighbridge for more accurate weighing. The proposed Gouda weighbridge is partly to improve overload control on the R46. However, alternative routes are not fully patrolled, meaning vehicles can still bypass the overload facilities.

3.6.3 Road Transport Management Systems

When the road freight sector was deregulated in the 1988, a full Road Transport Quality System (RTQS) was tabled for implementation to control driver training, vehicle roadworthiness and overloading, amongst other things. However, RTQS was never implemented, and it is believed that this has contributed to the occurrence of overloading throughout the country (National Department of Transport, 2010). In light of this, the National Overload Control Strategy (2004) identified self-regulation and Performance-Based Standards (PBS) for heavy vehicle transport as possible alternatives to address compliance in the road freight sector. Self-regulation has been implemented through the establishment of the Road Transport Management System (RTMS) while the application of Performance Based Standards (PBS) in the Western Cape is under consideration. If PBS are adopted in the Western Cape, these systems will operate in parallel to support measures such as the provincial OLC system.

3.6.3.1 Application of RTMS

The Road Transport Management System (RTMS) is a voluntary self-regulating scheme led by large scale private freight operators.

"The "RTMS is an industry–led, government-supported, voluntary, self-regulation scheme that encourages consignees, consignors and road transport operators to implement a management system (a set of standards) that demonstrates compliance

with the Road Traffic Regulations and contributes to preserving road infrastructure, improving road safety and increasing productivity (Road Traffic Management System, 2017).

Enforcement measures such as the overload control system are meant to deter non-compliance and encourage freight hauliers to exercise voluntary compliance through obtaining RTMS accreditation. Under RTMS, hauliers need to obtain transport permits to transport goods within the country. The hauliers are then monitored and risk losing their permits if they are found to be overloading or operating sub-standard vehicles. RTMS is a system that voluntarily regulates the heavy vehicle industry with the following aims:

- Reducing and minimising overloading;
- Preventing road damage and preserving infrastructure;
- Enhancing the safety of heavy vehicles on national roads;
- Taking care of truck drivers' health (driver wellness initiatives);
- Reducing traffic violations (e.g. reducing speeding incidents);
- Improving efficiency in various industry supply chains; and
- Actively promoting skills development within the transport sector.

RTMS voluntary participation has been adopted by about 10,000 heavy vehicles (weighing more than 25 tonnes), out of a total of between 150,000 and 200,000 currently operating in South Africa (Kamdar, Kienhofer, & Nordengen, 2016). As of November 2016, only 217 South African transport companies were RTMS certified (Kamdar, Kienhofer, & Nordengen, 2016). Achieving wider freight haulier participation and self-regulation may remain a challenge in the short to medium term.

A survey conducted in 2016 to determine perceptions of RTMS among road traffic authorities, banks, insurance companies, the RTMS steering committee, and road transport operators identified the lack of understanding of RTMS requirements as the most common obstacle to certification. The survey results showed that more than 60% of the operators who were surveyed and had not yet decided to apply for RTMS certification had not heard of the programme prior to the survey. Some of the results of the survey are presented in Figure 3-41.

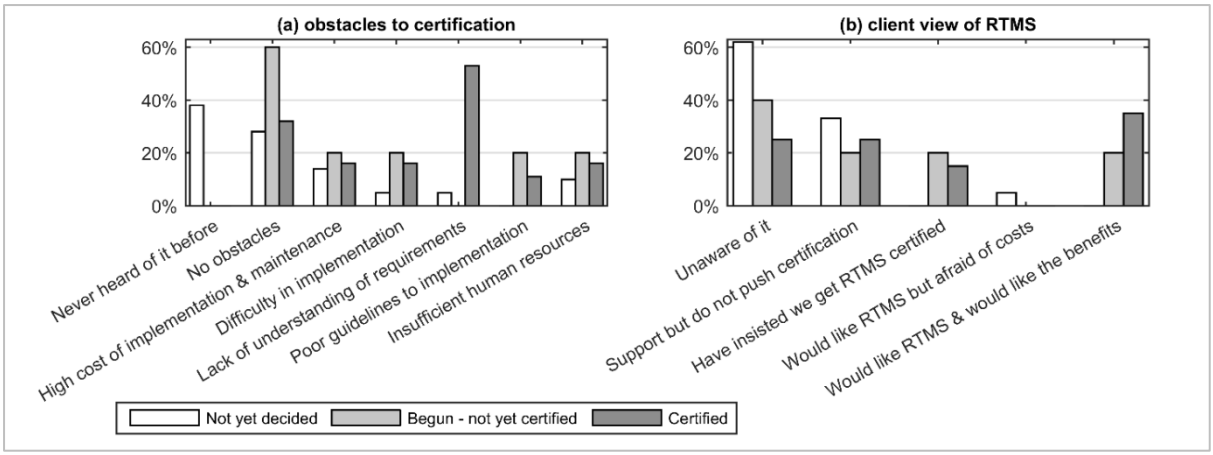

Figure 3-41: Survey results on obstacles to RTMS certification and operator views of the programme
(Kamdar, Kienhofer, & Nordengen, 2016)

The survey report does not provide a breakdown of the respondents to show the extent of the lack of awareness in the Western Cape. A similar survey can be useful in the province to develop interventions for wider adoption of RTMS.

3.6.4 Summary of Regulation/Enforcement Issues

Based on current understanding and additional information received during stakeholder engagements, the main traffic enforcement challenges can be summarised as follows:

- Limited institutional capacity in Traffic Management and the Transport Regulation divisions of DTPW, including limited funding to improve capacity;
- A lack of resources to extend the operating hours at all the weighbridges (i.e. 24 hours, seven (7) days a week operation);
- Insufficient capacity to follow up on offences when trucks don't obey the stopping signals triggered at the electronic/automated Weigh-In-Motion (WIM) weighbridges e.g. Beaufort West weighbridge;
- Insufficient number of weighbridges;
- Lack of capacity and resources to improve the standards of the system related to vehicle roadworthiness compliance testing, testing for driver fatigue and eyesight, and verification of driver qualifications;
- General lack of coordinated approach to regulation/enforcement e.g. one stop locations for testing, weighing, licensing;
- An inadequate OLC legal framework, requiring a review to be conducted. The current approach holds the driver accountable. However, there is a need to target the operator, instead of the driver. The limited ability to hold consignor, consignees, haulier and drivers liable for overloading detracts from the effectiveness of the enforcement system. This is similar to the "Chain of Responsibility" concept, which has been successfully applied to the road freight sector in Australia and has since been extended to other sectors such as public

transport. Such interventions originate from a realisation that driver behaviour is, in some cases, a result of the influence of other parties in the supply chain, who are generally not held accountable for negative impacts of bad driver behaviour.

- Driver and operator behaviour relating to weighbridge avoidance. Drivers use alternative routes, often with significant increases in trip distance simply to avoid weighbridges. Drivers also pass key enforcement areas at night, when weighbridges are non-operational;
- Corruption and illegal licencing; and
- Lack of sufficient driver training facilities.

3.6.5 Abnormal Vehicle Load Management

According to the DTPW Transport Administration and Licensing Directorate there are no freight regulations specifically directing the licencing of abnormal vehicles (AVs) in the Western Cape. Currently, all vehicles that do not comply with the permissible dimension/loads as per the National Road Traffic Act (Act 93 of 1996) are classified as abnormal vehicles (AVs). AVs must be registered and licenced just like normal freight vehicles, with the vehicle getting tested to prove roadworthiness and AV drivers are required to hold a Professional Driver Permit (PrDP). Operators with abnormal loads can then apply for a special permit to allow such goods to be transported using AVs. The operator wishing to move an abnormal load provides information on the origin and intended destination and pays appropriate fees. The Transport Administration and Licensing Authority suggests possible routes for the vehicle without dictating any specific route. The operator is then issued with a permit to allow abnormal load movement along the preferred route. The relevant local traffic enforcement authorities assist with facilitating alternative routes in cases where abnormal loads cannot pass through certain locations due to physical constraints, such as height or turning restrictions, or provide escort services where the movement will impact other road users.

Administration of abnormal loads is currently a function of the DTPW, which consults relevant local authorities when such loads move through certain jurisdictions. For example, the DTPW works closely with the CoCT for loads moving though the city.

3.6.5.1 Current Issues in Abnormal Vehicles Management

3.6.5.1.1 Infrastructure and Operations Issues

Abnormal vehicles have a major impact on road infrastructure. For the most part, the provincial road network is not designed to accommodate the movement of these vehicles [26] and, as a result, they are often required to make significant detours to avoid barriers, such as low clearance bridges. This spreads the physical impact of these vehicles to additional road length. In addition, there is often a disruption to

[26] One of the key issues highlighted by DTPW: Road Network Management is that the Department doesn't design infrastructure for abnormal vehicle loads movements, i.e. bridges or on/off-ramps.

normal traffic along these alternative routes due to road closures and slow operating speeds, which requires planned co-ordination and more law enforcement officials. This in turn increases the burden on the freight enforcement authorities.

One of the reasons for these shortcomings has been the absence of a route framework for abnormal loads in the Western Cape. An abnormal loads route framework can be developed based on the most frequently used routes and assists in developing sufficient understanding of the routes and any potential bottlenecks in advance to mitigate risks, minimise the disruption of traffic and reduce the damage to infrastructure. The known routes may also be protected from development [27], where appropriate, to accommodate future movements of abnormal loads. Future upgrades to road infrastructure along such routes will take cognizance of the abnormal load needs. The WCG is in the process of developing such a Freight Route Framework. As such, finalising the route framework and regular updates to it will be important actions for the Freight Strategy.

3.6.5.1.2 Data Management Issues

Closely linked to the route framework issue is the lack of a formal database to facilitate information sharing and the coordination of the permit application process. The DTPW has been developing a system for streamlining the classification and registration of abnormal load vehicles and the Abnormal Vehicle Permit (AVP) and tracking system are in the process of being improved. The aim is to upgrade the abnormal vehicle permit system to a point where related information can get loaded onto the centralised WCG DTPW Transport Hub, which is discussed further in Section 3.8.

3.6.5.1.3 Stakeholder Coordination Issues

Coordination of AVL movement is another area that has ongoing challenges. The DTPW has the primary mandate for managing abnormal loads but must coordinate the planning and actual movement with local authorities. In the City of Cape Town, a Memorandum of Understanding (MOU) is used to facilitate cooperation between the WCG and TDA, although suggestions have been made to consider the establishment of a formal institution to coordinate abnormal load movement. Such an institution would handle all abnormal applications and facilitate the actual movement e.g. providing escort vehicles. Other advantages of such an arrangement include consistency of standards across the Western Cape, pooling of resources and better information management.

There is also concern that the fees for abnormal load permit applications are collected and retained by WCG, despite local authorities, such as TDA, providing services in the abnormal load movement. A separate provincial institution could assist in mitigating this.

[27] This refers to preventing the development of structures and infrastructure that may present barriers to abnormal vehicle movement.

However, the scope of abnormal load movement in the Western Cape may not be significant enough to warrant a standalone entity given the resources needs for such an institution.

3.6.5.1.4 Inadequate Permit Fees for Abnormal Vehicles

The fees for abnormal load applications should ideally cover administration costs and compensate for road wear caused by the abnormal loads. However, there are concerns in the DTPW that abnormal vehicle permits may be under-priced in relation to the administration and enforcement capacity required to manage the operations.

Some abnormal loads are moved illegally, without any permits being issued, which may also require interventions that improve the enforcement of abnormal loading regulations.

3.6.6 Performance-Based Standards

PBS is essentially about better vehicles and is related to a movement by the private freight haulier industry to transport larger loads and reduce costs on vehicles called "smart trucks". These smart trucks are specialised, abnormal length truck and trailer combinations, allowing larger loads, but with lower impact on the road system than the usual abnormal vehicles. The concept is that even though the smart trucks carry heavier loads, their improved performance will lower the total number of trucks used and, therefore, lower the impact on road traffic and road infrastructure. From a business perspective, the resulting economies of scale work in the hauliers' favour, as the hauliers can move more freight with fewer vehicles, leading to savings in operating costs e.g. by reducing the average number of drivers per amount of freight transported. This can reduce transport costs when such benefits are passed on to consumers.

PBS replace the traditional approach of regulating heavy vehicles e.g. standards prescribed in the National Road Traffic Act (Act 93 of 1996). The traditional approach of regulating heavy vehicles is prescriptive and imposes limits on vehicle mass and dimensions but does not always ensure that vehicles are safe or have less impact on roads. The prescriptive approach also precludes the use of more efficient, safer, high-productivity vehicles, which may not necessarily meet the mass and dimension limits. The PBS approach, originating from Australia, specifies desired outcomes rather than how these outcomes should be achieved. The standards cover vehicle design elements such as rollover tendency, stability, road-width used and pavement wear. Under PBS, a better designed vehicle may be longer than is allowed in standards set up in the traditional approach, yet such a vehicle may optimise road space usage, cause less pavement damage and have a lower rollover tendency. A comparison of a normal heavy vehicle and a PBS combination is provided in Figure 3-42.

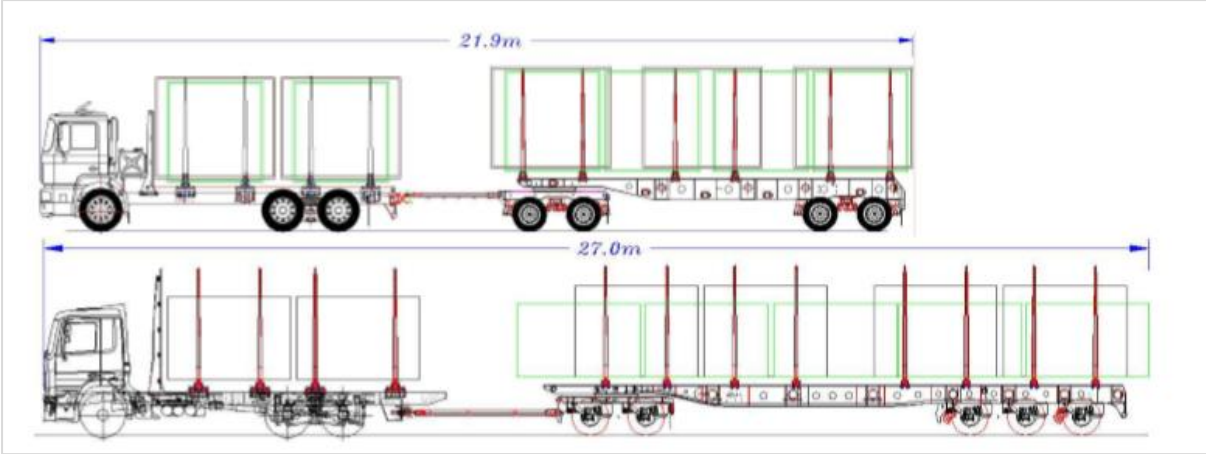

Figure 3-42: Comparison of a baseline (standard) vehicle and a PBS vehicle *(Nordengen, Prem, & P, 2008)*

A disadvantage with PBS truck configurations is that they are normally specific to a particular industry or commodity. Customised prototypes would be required for each industry that plans to adopt the technology or for each commodity group to be transported on smart trucks. This could lead to high cost to operators seeking to develop smart trucks. Industries that could adopt PBS in the Western Cape include general freight and car transport.

3.6.6.1 PBS Pilot Project in South Africa

There are currently a number of PBS pilot projects throughout South Africa to gauge the impacts on traffic and safety of a small fleet of larger freight vehicles with improved design.

Currently, 245 smart trucks are registered to operate on certain routes throughout the country, with many operating in the forestry industry in KZN and Mpumalanga provinces, and only five (5) operating in the Western Cape. The monitoring phase of the smart truck pilot project comes to an end at the beginning of 2019, and it is uncertain if the trucks will be approved for general use.

In the Western Cape, a major concern for the provincial government is that the use of smart trucks may not produce the intended benefits. Supporters of the concept claim that fewer trucks will be needed if the use of smart trucks is approved. However, there is no guarantee that the number of vehicles removed from the road will be significant. Smart trucks can make the road freight industry even more competitive and cost effective, meaning that more freight will shift to road. Operators will respond by adding more of these trucks, which could lead to an increase rather than a decrease in the negative impacts on traffic or road condition. For general cargo and other contestable cargo, this could be similar to what happened after 1993 when the road freight industry successfully negotiated for an increase in legal axle mass loads (LAM). This increased road freight's competitiveness to the point of encroaching markets that were previously served exclusively by rail.

Prioritising PBS in the Western Cape before adequately considering alternatives (e.g. rail) could have the adverse result of further promoting road usage. Such a

development may lead to slow progress in road-to-rail modal rebalancing. This will be more likely in the continued absence of an appropriate user-pay policy for road freight externalities. Furthermore, assessment of the impact of PBS on road-to-rail initiatives requires a clear understanding of the capacity of rail freight transport in the Western Cape. Part of the study to determine the likely impact of PBS for general freight may include developing an understanding of rail's full potential. In Australia, research conducted in determining the impact of PBS found out that only 15% of freight in the country could be optimally moved by rail. This showed that road freight would have a key role in the economy, leading to promotion of PBS as smart trucks were not considered a threat to rail, but rather complementary to the mode in supporting economic development. As discussed in Section 3.4.2.1, previous studies indicated that the best-case tonnage market share for rail in the Western Cape was around 19%. As a result, road freight may have a key role to play in the Province and could benefit from PBS.

The cost, regulatory and administrative challenges of getting smart trucks approved for wider adoption are also of significant concern in the Western Cape. Questions have been raised on whether it is not in the interest of the Western Cape and South Africa to simply incorporate the smart truck design improvements in existing standard heavy vehicles. By reducing rollover tendency and improving stability and road-width of standard truck configurations, the benefits earmarked in PBS can be extended to a large number of vehicles. In addition, the standard trailer configurations do not require special permits, which eliminates some of the regulatory and administrative obstacles.

3.6.6.2 Regulation and Licensing of Smart Trucks

At National level, DoT has embraced PBS in principle although there is no formal framework for regulatory smart trucks yet. There is an existing PBS National Committee and a PBS review panel, which have relied on parliamentary grant funding to complete demonstration projects, such as those in the timber industry in KZN.

Smart trucks operators and transporters considering adding smart trucks to their fleet must first be certified in terms of the RTMS. Fees for operating smart trucks are currently published by DoT together with other fees for abnormal vehicles as required by the National Road Traffic Act (No. 93 of 1996). Smart trucks are still classified as abnormal vehicles and must follow the standard abnormal vehicle licencing process.

A blanket "concession" was provided by the National Department of Transport (DoT) for the pilot project period, during which performance of smart trucks is being monitored. However, the blanket permit approach has essentially been perceived as an exemption on the need for standard abnormal load permits by the road freight industry involved in the pilot. This has led to smart trucks operating unchecked and with insufficient enforcement.

The WCG's current position is that more study is required on the impacts of smart trucks before a decision can be made. However, the road freight industry continues to

invest heavily in these technologies and there is a risk that the system will be supported by Government without adequate scrutiny.

Case Study 3-2: Australia PBS outcomes

In 2016, it was estimated that PBS vehicles made up to 25% of total truck sales in Australia. The benefits of PBS in the country were an estimated overall reduction in truck movements of 22% and an estimated overall reduction in the number of trucks on the road of 40%. This in turn has had significant fuel savings, resulting in lower carbon emissions (Bruzsa Laszlo, 2016).

3.6.7 High Cube Containers

International Organisation of Standardisation (ISO) High Cube containers are containers that result in a total truck height of up to 4.6 m, when transported using standard trucks with a trailer deck height of less than 1.6 m. The adoption of these taller containers in South Africa has happened gradually over the last few decades as global freight standards have changed; however, national regulations do not permit these containers. In 1991, the legal maximum freight road vehicle height in South Africa was amended from 4.1 m to 4.3 m, but as more High Cubes have been adopted, an increasing number of vehicles have technically been operating illegally. In September 2011, the national Minister of Transport attempted to mitigate this by exempting hauliers carrying the High Cube containers from complying with the height restriction regulations by granting these hauliers an exemption that runs until the 31st of December 2018. As the deadline for the moratorium draws near, there has been significant lobbying by industry for amendment of the relevant legislation, with hauliers complaining that they would incur significant costs if they had to revert to smaller containers to comply with regulations. Another argument made by industry is that, so far, no stakeholders have reported any incidents or objections relating to the current use of High Cube containers. The 2016 National Road Freight Strategy makes the following statement regarding High Cube containers:

"*There is no known reason why the road traffic legislation cannot be amended to permit the transport of loads of 4.6 metres as the most cost effective and logical solution. As some neighbouring states have already amended their height regulations (Zambia and Zimbabwe) there will in any case, be a need to harmonise regulations in the region.*" (pg. 44).

During stakeholder consultation, representatives from the DoT mentioned that there was ongoing work at national level to reach a position on High Cube containers in South Africa. This work was yet to be finalised at the time of completing the status quo review and the project team could, therefore, not ascertain the DoT's position regarding High Cube containers.

In the Western Cape, no formal DTPW study of the benefits and risks of High Cube containers had been conducted at the time of the status quo review to inform a provincial position on the issue.

3.6.8 Off-Peak Freight Movement

Off-peak freight movement has in the past been seen as a beneficial practice as it was considered an option for reducing the impact on congestion and emissions during peak times. Earlier versions of the PLTF (2011/12 – 2015/16) included consideration for regulation that restricts the movement of freight in the Western Cape to off-peak periods. However, subsequent versions of the PLTF (2016/17 – 2020/21) indicate that the approach may not be practical or valuable in reducing the impact of freight movement during peak periods and could increase the cost of freight transport in Western Cape. Given that off-peak freight movement is now being considered at a national level, the topic is now being revisited.

The DoT proposed amendments to the NRTA in 2015 to restrict the movement of goods vehicles of more than 9,000 kg on urban roads from 6am to 9am and from 5pm to 8pm from Mondays to Fridays. The amendments have not been promulgated, and the status of these amendments is unclear.

In the Western Cape, the CoCT's Freight Transport Strategy includes content on this topic and highlights the risk of resistance from the industry to off-peak deliveries. Some of the reasons that are cited for the inappropriateness of off-peak freight movement include:

- Risk of speeding by drivers to make up for lost time or to avoid restricted periods;
- Increased overloading by truck operators to make up for lost capacity;
- Increased pressure at the ports due to reduced periods for truck movement;
- Need for designated parking sites for trucks during restricted periods;
- Need to invest capital into more capacity (trucks), which may lead to loss of industry competitiveness and higher costs of transport; and
- Downstream impacts for receivers who will be required to wait for deliveries to be made in specific times.

However, the arguments listed above do not prevent the concept from being explored further.

The benefits of off-peak freight movement include reduced vehicle operating costs and emissions and improved depot turnaround times. Vehicles operating in congested conditions generally use more fuel, experience greater wear and cause more pollution than those operating during off-peak periods. However, technological advances may alter this situation. Vehicles with stop-start technology are becoming more common and this technology has the potential to reduce fuel consumption, operating costs and emissions during peak periods. The use of this technology may reduce the financial incentive to operate during off-peak periods.

Restricting freight movement during peak periods may also improve road safety, by reducing the interface and probability of accidents between high volumes of passenger vehicles and heavy freight vehicles. Data from the City of Cape Town for the period May 2014 to May 2016 and presented in Figure 3-43 shows that most crashes involving heavy vehicles in the Cape Metro region occurred between 6am and 6pm and there may be benefits in limiting the movement of heavy vehicles during certain periods. A fuller understanding of the likely impact on road safety would require further analysis.

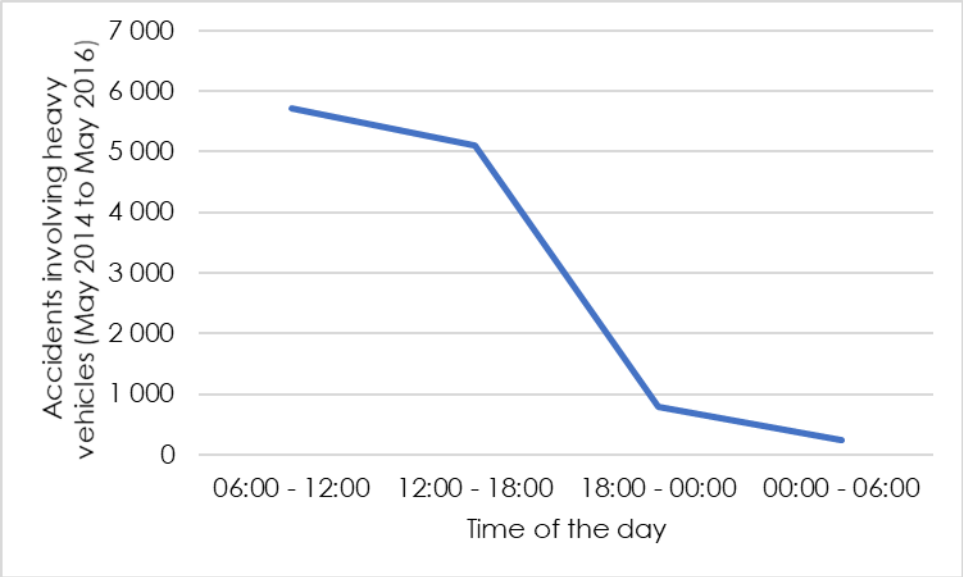

Figure 3-43: Distribution of road traffic crashes involving heavy vehicles in the Cape Metro region for May 2014 to May 2016

Case Study 3-3: Stockholm off-peak delivery pilot

Between 2014 and 2016, the City of Stockholm ran an off-peak goods delivery pilot project, to examine the feasibility and potential of off-peak delivery. The project considered factors such as delivery times, environmental and noise issues, workforce utilisation, work environment, and the storage facilitates and delivery vehicles required. The pilot project involved tracking two heavy delivery trucks, specially designed to reduce noise and pollution, with permits to deliver goods in the inner city during the restricted time. The pilot study showed that off-peak delivery vehicles generally perform better on driving efficiency, delivery reliability and energy efficiency. The driving speed on the same delivery route during the off-peak was approximately 31% higher than in the morning peak (Fu Jiali, Jenelius Erik, 2017).

The impact of these measures on levels of congestion is uncertain. The National Traffic Information System (NaTIS) live vehicle population data for the Western Cape, as of

30 June 2017, shows that the percentage of heavy load vehicles with Gross Vehicle Mass (GVM) of 3,500kg or more was just 3.41%. This may indicate that the contribution of heavy vehicles to congestion issues is relatively low, especially when compared to passenger cars that make up 65% of the population. Admittedly there are certain areas such as the ports and industrial areas where the percentage of heavy load vehicles is above average, resulting in localised congestion. In such cases, the application of localised restrictions may be more appropriate than a blanket restriction.

The discussion above shows how several factors need to be considered when assessing the viability of restricting off-peak freight movement. A comprehensive feasibility study is an option worth considering.

3.6.9 Implications for Strategy Formulation

Effective freight traffic management, regulation and enforcement, particularly on roads, is very important for improving safety and is a key factor in reducing the cost of freight to society by helping to protect infrastructure from the damage caused by accidents and overloading. Nearly all the other focus areas for the Freight Strategy have some impact on or are impacted by traffic management in the Western Cape. Therefore, improved traffic management is a very important area for targeted strategic action.

Some initiatives are already being considered in the Western Cape to improve traffic management, which will require consideration in the Freight Strategy. These include:

- Increasing resources and capacity for DTPW traffic management division to ensure a greater number of weighbridges open for longer hours, for example.
- Proposal for an amendment to the NRTA to include provisions for the consignor, consignees, haulier and drivers to be held liable for overloading;
- Increase in WIM equipment and mobile weighbridges together with satellite tracking to apprehend trucks that avoid the static weighbridges (see Section 3.7.1.1);
- Development of a national operator registration system to identify main offenders;
- Registration of competent, licensed road freight operators, with details of their facilities, vehicles and drivers to improve quality control of road freight transport operations;
- Effective implementation of RQMS, as defined in the NRTA, including:
    - Vehicle quality control (testing station accreditation and road side inspections);
    - Driver quality control (professional driver permit);
    - Overloading control (weighbridge network); as well as

    - Regulations regarding the transport of dangerous goods and abnormal loads.
- Use of incentives and participation benefits for accredited operators, e.g.:
    - "Weigh-less" incentive, limiting the weighing of accredited operators' vehicles to spot checks;
    - Participation in the PBS smart trucks research programme; and
    - Other possible incentives such as discounts on toll fees.

Appropriate incentives present opportunities to reduce the cost of enforcement.

Related to the above, is the need to raise awareness of the impacts of freight movement amongst operators and other stakeholders in the value chain. This has the potential to promote voluntary compliance, reducing the burden on law enforcement. This is also consistent with the RTMS approach.

3.7 Status quo of Western Cape Freight Transport Technology and Innovation

3.7.1 Technology and Innovation for Regulation/Enforcement

The DTPW's Traffic Management division is already utilising innovative technology to enhance its enforcement activities. Technologies that are already being piloted or are under investigation in the Western Cape include:

3.7.1.1 Weigh in Motion

A Weigh in Motion (WIM) system measures the dynamic axle weight of a moving vehicle to estimate the corresponding static axle mass. Such systems are designed for unobtrusive and continuous collection and monitoring of vehicle weight information. The range of collected data may vary from precise individual weight measurements for each heavy vehicle to aggregate vehicle weight profiles for selected road sections (Oskarbskia, Jacek, & Daniel, 2016).

Case Study 3-4: Mantsole traffic control centre weigh in motion

Outside the WC, WIM has been in place for some time, starting with Grade A Traffic Control Centres such as Mantsole, located 130 km North of Johannesburg. The weighing system at Mantsole, which includes a WIM system was commissioned in 1997. This system is, however, not used as a standalone facility but provides initial screening of potentially overweight vehicles, which are then directed to a static weighing facility at the same traffic control centre. Vehicles can be weighed while moving at speeds of up to 80 km/hr. Overhead variable message signs redirect legally loaded vehicles back onto the highway and overloaded vehicles to a holding area for prosecution. Overloaded vehicles are only allowed to leave after the overload has been corrected. As with other conventional weighbridges, avoidance of the overload control facility has been observed. Recommendations for increased deployment of mobile weighing teams on the alternative routes have been made.

The WIM facilities have added value through reducing the effort and cost involved in overload control by reducing labour requirements since screening is done automatically (Nordengen, P).

Although not as accurate as static weighing, WIM is useful for providing reasonable quality data for freight traffic management. The benefits of WIM include:

- A reduction in time spent at overload control facilities. Only overloaded vehicles are stopped after screening. This saves time for operators of compliant vehicles.

- A reduction in human capacity requirements and cost of weighbridge operations. WIM allows automatic screening of overloaded vehicles, making it unnecessary to weigh every heavy vehicle that goes past an overload control station.

3.7.1.2 Average Speed Over Distance and Automatic Number Plate Recognition

Average Speed Over Distance (ASOD) and Automatic Number Plate Recognition (ANPR) camera technology is used in the Western Cape. This technology can help to improve regulation and enforcement and is expected to have a positive effect on road freight traffic management. ASOD and ANPR are being used in conjunction with the Overload Control System (OCS), although greater coverage of these technologies is still required across the Western Cape. The DTPW uses ASOD and ANPR for Provincial Traffic Law Enforcement operations, including:

- Identifying unlicensed/unroadworthy vehicles;
- Identifying vehicles involved in speeding violations;
- Managing weighbridge evasion;
- Identifying vehicles with outstanding infringements, and
- Collecting crash data.

3.7.2 Data and Information Management

The WCG DTPW Transport Hub project, described in greater detail in Section 3.8.5, includes the integration of various technologies being piloted in, or envisioned for the freight management system by connecting currently separate management systems and aggregating the resulting data. This will significantly improve operational and infrastructure-related decision making. It will help in efforts to curb non-compliance and will improve road safety by providing information that improves the understanding of the key issues.

3.7.3 Technology and Innovation for Freight Industry Productivity

Productivity gains in the freight sector are generally initiated by private sector operators, although government regulation may be necessary to facilitate certain innovations.

In the Western Cape, the main productivity-related innovation under consideration is PBS and the related smart trucks.

3.7.3.1 Smart Trucks

Smart truck technology is seen to have significant potential to help improve the efficiency and productivity of the road freight industry and is also meant to improve safety and reduce congestion. The use of smart trucks in South Africa is being tested under a Performance-Based Standards pilot project, which was described in more detail in Section 3.6.6 above.

3.7.3.2 Bimodal Technology

As mentioned in Section 3.5.3.1, Transnet has initiated an operation where semi-trailers can be hauled on rail tracks. Transnet is working with a company that owns the patented technology that will be used. Bimodal trains are assembled by installing compact specialised rail bogies to semi-trailers as illustrated in Figure 3-44.

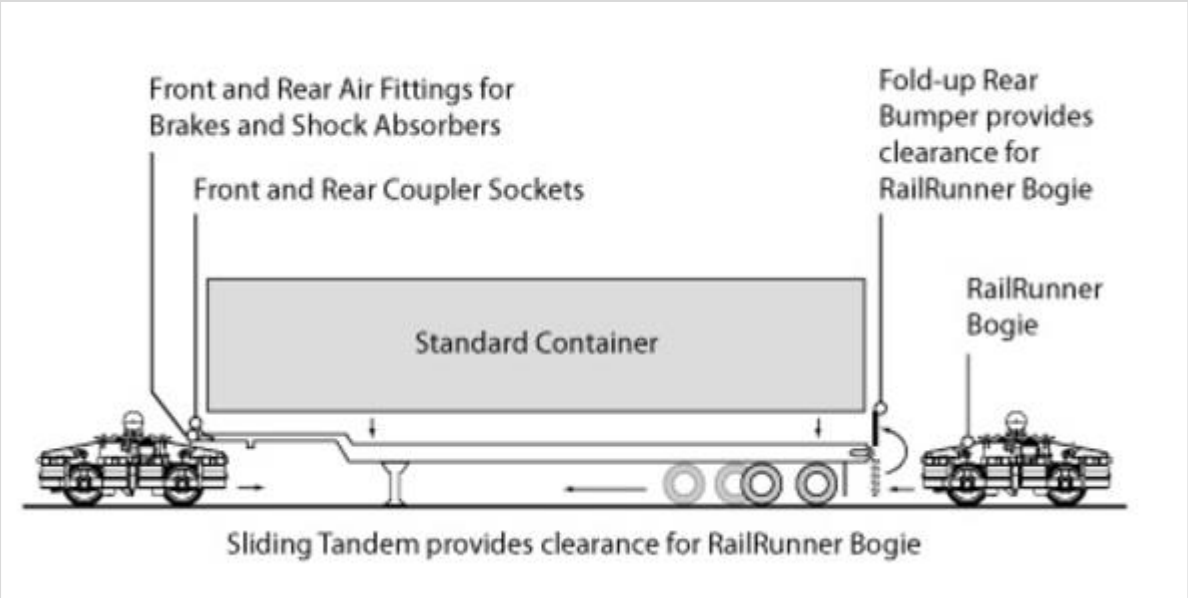

Figure 3-44: Bimodal semi-trailer assembly *(RailRunner, 2017)*

When operating on rail, the semi-trailer highway wheels are raised, allowing the highway wheels to clear the track as illustrated in Figure 3-45.

Figure 3-45: Bimodal semi-trailer in service *(RailRunner, 2017)*

The technology transforms a road vehicle to a rail vehicle in a matter of minutes and eliminates the need to lift shipping container from road vehicles to rail flat beds. This reduces the capital requirements for providing intermodal facilities such as lifting equipment and infrastructure.

Applications for the intermodal semi-trailers include:

- Short-haul intermodal shipment- currently, it is not economic to transport freight using rail over short distances. The bimodal technology has flexibility that makes rail a suitable option for some short haul rail transport and can play a key role in promoting modal shift even for short distance freight movement;
- Feeder Networks – the bimodal technology can play a key role in improving the viability of branch lines. The technology is a suitable option for those who currently do not use rail due to the lack of intermodal facilities;
- Inland terminals and intermodal facilities - Transnet plans to use the technology at the Belcon facility as discussed in Section 3.5.3.1.2;
- Movement of waste containers to remote landfills. This application will significantly increase possibilities for wider adoption of waste-on-rail transport discussed in Section 3.4.3; and
- Specialised containers for automotive markets.

Transnet plans to extend use of the technology on the corridors, starting with application on the CAPCOR, targeted for launch in 2018.

3.7.4 Overview of Other Freight Technology and Innovation

The integration of innovation and technology in freight transport delivery in the Western Cape is still in the early stages and there is potential to expand its role to other areas. This section provides general information on additional interventions that may be considered for the Freight Strategy. There are a wide range of possible innovations and this list is not necessarily exhaustive.

3.7.4.1 Onboard Weighing

The use of onboard weighing technology on heavy vehicles could assist in reducing the incidence of overloading. In South Africa, several freight transport operators are already utilising this technology as a tool to self-regulate and avoid mistakenly overloading their vehicles. This occurs under the auspices of the RTMS.

In certain countries, such as Australia, onboard weighing equipment is used to transmit real-time data on axle loads. This is currently done under the Intelligent Access programme discussed in Section 3.7.4.2 (Cai, Dang, Karl, & Koniditsiotis, 2010). The transmitted data is used to direct vehicles, such as smart trucks, along routes with infrastructure that is designed to handle the vehicle loads. Such data can also be used as an input to calculate overall freight demand by automatically aggregating loading data. This is faster and more accurate than current approaches based on manual vehicle counts and manual aggregation of load data.

While this technology is an effective tool for self-regulation, it is not effective against operators who deliberately choose to overload.

3.7.4.2 Regulatory Telematics

Commercial heavy vehicle telematics have many applications, ranging from aiding drivers to detecting and tracking vehicles and loads. In most cases, these are developed by the private sector, although governments are increasingly realising the potential to incorporate this technology into regulatory systems. In South Africa, meaningful work has been done by the private sector in this area, with fleet operators utilising technology provided by companies such as C-Track. Many RTMS-certified vehicles are using this technology. However, the extent to which regulators in South Africa have taken advantage of this technology or the data it generates is still limited.

In Australia, the first regulatory telematics applications were implemented in New South Wales (NSW) under the Intelligent Access Program (IAP). The IAP feasibility study found that the technology could provide a significant mix of private and public benefits (Cai, Dang, Karl, & Koniditsiotis, 2010) including:

- Reduced regulatory burden on operators e.g. through a reduction in the need to stop for inspections by enforcement. Most regulatory requirements can be checked remotely;
- Better road safety;
- Improved efficiency on the road network;
- Reduction in infrastructure wear; and
- A more sustainable environment.

3.7.4.3 Enhanced Automatic Vehicle Identification

Enhanced Automatic Vehicle Identification (AVI) is similar to the ANPR systems already in place in the Western Cape, as discussed in Section 3.7.1.2. AVI has greater functionality for monitoring other aspects, such as emissions from vehicles to identify vehicles that exceed set pollution limits.

3.7.4.4 Collapsible (Folding) Shipping Containers

Folding shipping containers are in development, although not yet commercially available. Such containers are envisaged to improve the handling of empty containers by saving space at ports and reducing the truck trips required to reposition empty shipping containers. Concepts of such containers are illustrated in Figure 3-46.

Figure 3-46: Folding shipping container concepts

3.7.4.5 Driver Alertness Technology

Technology that monitors driver alertness already exists and is used in industries such as mining. A well-known example is Optalert ® developed in Australia, which provides an early drowsiness warning for drivers. The technology has been adopted in the road freight industry in several countries and can be considered for improving driver performance in South Africa and in the Western Cape.

3.7.4.6 Electric and Autonomous Vehicles

Another key technology consideration is that of electric vehicles (EVs). Increasing the use of EVs in the Western Cape has the potential to significantly decrease energy use, transport emissions and noise pollution. So far, not much progress has been made on this initiative; however, the Department of Economic Development and Tourism, in partnership with certain car manufacturers, is currently investigating the potential to provide vehicle charging infrastructure along certain road transport routes. This investigation is currently in the early stages; however, the provision for supporting infrastructure and systems to encourage the use of electric vehicles is seen as a key strategic action. The potential role for the DTPW is still to be determined.

Another technology under consideration is that of autonomous, or self-driving vehicles. Although the concept has begun to take off in places such as the United States in the private vehicle market, the use of this technology in the freight space is still in the concept stage. Commercial use of self-driving freight vehicles technologies is still several years away. This does give South Africa time to prepare for the arrival of the technology.

3.7.4.7 Freight Delivery Unmanned Aerial Vehicles (Drones)

Unmanned Aerial Vehicles (UAVs), generally referred to as drones, are under consideration as an alternative to the transportation of certain goods on land. UAVs reduce the need to use road transport to make deliveries and can therefore have the positive effect of reducing road freight externalities. In many countries where UAVs are under consideration, the main challenge experienced is the difficulty in getting regulatory approval from aviation authorities. Assessment of the vehicles' likely impact

on airspaces is required, as well as the potential safety risks. As with self-driving vehicles, commercial use of UAVs in South Africa is still several years away.

In addition to the above, other technologies include improved vehicle and trailer design (e.g. lighter chassis, low resistance tyres), dedicated short-range communications systems that improve communications between heavy vehicle operators. Most of such technology is incorporated by Original Equipment Manufacturers (OEMs).

Improved access to computing capabilities by truck operators through smartphones is a development that has opened greater possibilities for using information technologies to improve effectiveness of freight and transport delivery in general, using mobile applications.

3.7.5 Implications for Strategy Formulation

Technology and innovation have the potential to generate significant benefits for the Western Cape freight sector. The road freight sector has low barriers to entry and is thus extremely competitive, resulting in operator innovation being an important way of ensuring survival. This has, however, contributed to making the sector more productive than, and therefore outcompeting, the monopolistic rail freight sector.

There are many innovations that can be considered, by both operators and regulators. This makes careful consideration of the value of different solutions important. Technology and innovation need to clearly address freight delivery needs in the Western Cape without adding unnecessary cost and complexity.

The need to define how the Western Cape Government, through the DTPW, may be involved or may contribute to technology interventions is an important consideration for the Freight Strategy. This is because much of the innovation in the sector has been led by private sector operators, without much involvement from government. It may be necessary, in some cases, for Government to get involved to improve alignment of private sector interventions with broader social and economic objectives. This may involve some form of regulatory intervention, where appropriate, although a balance needs to be maintained between ensuring compliance and allowing room for innovation. Another area in which Government may have a role is financing technology initiatives, especially research. Provision of more financing resources may encourage industry to invest more in technology.

Coordination of technology and innovation activities may need to be supported by appropriate institutional structures. Common institutional arrangements for innovation and technology in transport take some form of private and public-sector partnership (PPP), for example academia-industry-government arrangements, through which risk is appropriately allocated to the party best positioned to manage it. Each party perform tasks that it is best suited to handle, within an appropriate framework for cooperation and coordination. Public and private sector partnerships can also help in leveraging existing private sector work for the benefit of society. The Western Cape Province has a strong innovation ecosystem, hence opportunities to take advantage of initiatives being championed by the private sector need to be considered.

Although most of this work has been in public transport, increasing awareness of freight transport needs and supporting initiatives may lead to development of innovations for freight transport.

For technology interventions that are largely in the domain of government, such as innovation in traffic management and enforcement, institutional arrangements will mostly relate to intergovernmental arrangements for managing the systems, data sharing and even financing. Despite the absence of external parties, such as the private sector, in the administration of such interventions, institutional complexities that require mitigation may still exist.

The cost of technology is an important consideration for innovation in the sector. Appropriate cost-benefit assessments, typically through feasibility studies for technology interventions, may be needed when reviewing technology options. This needs to cover the lifecycle costs of interventions. In some cases, the initial investment required may not be prohibitive, although the operating cost, which can easily be overlooked, can make some technological interventions financially unsustainable.

3.8 Status quo of Western Cape Freight Data and Information Management

3.8.1 Freight Data Needs

The following summarises areas where data is important for freight planning and management, including areas identified in the PLTF (2016/17 – 2020/21):

- Project selection, prioritisation and asset maintenance cycles for adequate road maintenance funding allocation;
- Infrastructure and operational planning for all freight transport modes;
- Monitoring of road freight movements for quality, regulatory control and compliance;
- Planning and decision making for the whole freight network;
- Improvements in freight-related road and rail safety over the whole network;
- Input into the National Databank to support inter-regional and national planning and decision-making; and
- Maximising cost saving potential and efficiencies through the application of data-driven technological interventions.

3.8.2 Current Data Management Systems in the Western Cape

The key freight data systems currently used or under consideration in the Western Cape freight system include:

- ***NaTIS*** – NaTIS is the national system for data relating to vehicle licencing.
- ***The Overload Control System (OCS***) - this covers the regulation of road truck freight vehicle overloading using strategically positioned weighbridges and an enforcement officer network. The OCS collates vehicle specific information to assist with enforcement and monitoring;
- ***Road Network Information System (RNIS)*** – includes data and information on the provincial road network, including the number of vehicles of all types using this network. Although no vehicle-specific information is collected, the counts accurately record heavy vehicle movement on the network;
- ***Abnormal Vehicle Licences (AVL)*** – the abnormal vehicle licencing tracking system is currently under development, and will provide up-to-date information on route and area-based licencing of abnormal vehicles;
- ***Motor Vehicle Licensing*** – this includes road vehicle licencing authority information on licenced and roadworthy vehicles linked to the NaTIS system. This information is available to the traffic enforcement authorities through the Enforce system; and
- ***Road Accident Reporting System*** – this includes road safety related incident data collected and managed by the DTPW and incorporated in the Provincial Analysis System (iPAS).

3.8.3 State of Data and Information Management in the Western Cape

The PLTF (2016/17 – 2020/21) notes that there is currently a lack of electronic information management capabilities in the Western Cape Government and this limits the effectiveness and flexibility of the transport management processes. A key data challenge in the provincial transport environment is fragmented information systems, monitoring and reporting. Systems are not effectively integrated and there is insufficient data sharing. Databases are also generally not accessible electronically. The existence of numerous data sets that are not necessarily coordinated leads to duplication of data collection efforts and inconsistencies in data formatting. This reduces opportunities for data to be used for multiple purposes. Examples of this fragmentation include:

- Separate collection of and collation of accident report information. The DTPW's Accident Data Centre collates accident report information for other regions in the Western Cape, although the CoCT and Stellenbosch have their own separate systems; and
- SANRAL doing real-time incident tracking on i-traffic.co.za as part of the Freeway Management System, although this information is not used as an input to provincial traffic accident reporting.

Manual data collection is prevalent across all planning activities, including infrastructure planning. In the development of provincial strategic plans, data sources used in the manual process include government reports, infrastructure plans and strategies, parastatal plans (Transnet, SANRAL etc.), annual reports and interviews with key stakeholders.

Manual data collection and processing is labour intensive and costly. This cost is increased when efforts are duplicated because of poor coordination. There is also a cost associated with inferior data quality. Data quality is negatively impacted by manual collection, especially where capacity is inadequate. As an example, the Accident Data Centre is inadequately staffed and has data processing backlogs of nearly a year. Incomplete data records and inadequate data analysis skills and capacity are cited as issues impacting effective safety planning management by authorities in the Western Cape. Both the Western Cape Government and the CoCT are working to improve this.

Against this background, consideration has been given to establishment of a DTPW-managed Intelligent Transport Data Centre. The freight planning function needs to be supported by regular data updates and, as such, freight should be included in these efforts by the DTPW to improve data management.

3.8.4 Freight Data Management Precedent

3.8.4.1 South Africa Freight Data Management Precedent

In South Africa, the need for better freight information management has been recognised at national level, and in other provinces. A National Freight Monitoring Framework (NFMF) was developed in 2005, which among other goals aimed to

improve the DoT's and other stakeholders' access to reliable information on freight movement in the country. To achieve improvements in data availability and accessibility, as recommended in the NFMF, a project to develop a National Freight Data Bank was initiated by DoT. The initial intention was to have a central data bank for all relevant freight data in the country, although subsequent changes were introduced resulting in the development of provincial data banks. At the time of completing the status quo, the Eastern Cape, Gauteng, Limpopo and Kwazulu-Natal provinces had active provincial freight data banks.

Development of provincial freight data banks introduced challenges in inconsistency of data quality and presentation format. This affected decision making, especially at a national level. Work to improve consistency and to aggregate data in a central National Freight Data Bank was initiated in 2015, leading to the current National Freight Data Bank. Work is still in progress to improve the National Freight Data Bank.

3.8.4.2 International Freight Data Management Precedent

A review of freight data management practices in other counties shows that there is a trend of forming dedicated entities that are responsible for managing data and information either at national or regional level. This is becoming common as the importance of data in managing transport delivery gets recognised. In Australia, NSW formed an entity named Transport Performance and Analytics (TPA) by combining the NSW Bureau of Transport Statistics and Bureau of Freight Statistics. TPA is an operating division of Transport for New South Wales (TfNSW) and operates as a centre of excellence, providing objective and credible transport data, advice and analysis. The entity provides the evidence base that helps drive strategic decision-making for an effective transport system (www.transport.nsw.gov.au).

Another example of a separate data and information management entity in the US DoT Bureau of Transport Statistics (BTS), an independent statistical agency within the US Department of Transportation. Freight data generated by BTS includes the Commodity Flow Survey (CFS) and trans-border movement of freight by mode of transportation, which can be used as input into freight demand modelling. The BTS has a mandate enshrined in law, hence it can be held accountable for delivering on certain data and information management functions.

3.8.5 Western Cape Government DTPW Transport Hub

The DTPW is in the process of developing a centralised data management system, known as the WCG DTPW Transport Hub. The broad goal of this initiative is to develop a central data platform for the storage, sharing and appropriate use of transport data, to support effective transport decision-making and performance monitoring. This will make electronic updates possible and will enable the generation of integrated transport management information on demand. The aim is to integrate datasets across the Transport Management Branch and eventually the entire Department to improve performance and enhance service delivery.

Integration of freight data systems improves freight management, for example, tracking of specific freight vehicles is possible and overload data can be shared

seamlessly between the OLC system and enforcement officers on the ground. The Transport Hub will include information on freight regulation and enforcement, using data collected at provincial weighbridges. Other information will be sourced from the vehicle licencing and the freight enforcement network. The Transport Hub will also be useful for collating information regarding road safety and the associated role of freight.

Currently, fines can be directly issued from the OCS, which links directly to the CSIR WinNuwei weighbridge software, where all the information about the offence, including type, vehicle details and corresponding fine amounts are stored. However, the WinNuwei system is currently not linked to NaTIS but this will form part of the Transport Hub project, and there is a plan to directly link these various data streams to enforcement officers' handheld devices to improve enforcement effectiveness.

3.8.6 Provincial Transport Management System

The Transport Hub is a core part of the overarching Transport Management System which will be utilised for system management and strategic monitoring purposes. The Transport Management System is currently in the concept stage and will include a centralised intelligent transport operational command centre that will utilise data from the Transport Hub. Under the Transport Management System, data will be accessible to a variety of parties for planning and management functions. Work on the Transport Hub is proceeding even though the command centre is yet to be developed. Crucial to the success of the Transport Management System is a comprehensive strategy for the operations of the command centre, which effectively integrates the different elements of transport operations in the Western Cape.

3.8.6.1 Current Issues in the Provincial Transport Management System

A number of challenges present hurdles to the development of the provincial Transport Management System. These challenges are as follows:

- Integrating different data systems that run on different platforms. This is complex and may introduce delays in rolling out the transport management system;
- Operational difficulties exist in managing a shared data and information resource. It is necessary for all relevant stakeholders to buy-in to the initiative. Getting stakeholder buy-in takes time, which may impact project timelines.

3.8.7 Implications for Strategy Formulation

As with the Planning, Coordination and Institutional Arrangements, good data management is foundational for effective freight planning and delivery in the Western Cape and is important in getting the basics right. Data management is closely linked to freight planning as successful planning relies on quality information to ensure fact-based decision making.

The initiation of the Provincial Transport Management System is a major step towards improving data and information management in the DTPW, where successful implementation of the initiative will significantly improve fact-based decision making.

Since this work is already ongoing, the focus will be on understanding how this system can be used to support improved freight planning and decision-making.

As the Transport Management System is developed, it will be necessary to identify the key freight data needs and to ensure that these are fully considered. As an example, an FDM is being developed for this Strategy and it is likely to be an important input to provincial freight planning. Ideally, the outputs should be accessible through the Transport Management System.

A general observation is that some of the transport data collected by the DTPW has a strong bias towards public transport and excludes information that can help in making freight decisions. It is necessary to ensure that freight needs are adequately addressed in the Transport Management System. This may require representation of a freight resource on the team that is implementing the Transport Management System.

Depending on the uses of data in the DTPW, certain specialised skills for data analysis may become necessary. There is need to consider appropriate skills development programmes to improve data analysis in the Department to get the best value out of the data. Where necessary, hiring people with the requisite skills may be necessary. Such skills are in high demand as both the private sector and government are increasingly investing in data and information management capabilities. Human resources may be shared with other functions, such as public transport as hiring freight specific resources may be financially unsustainable.

The institutional arrangements for the management of data and information are an area that may require further investigation. Similarly, the overall operations and management coordination of data from all the different contributing entities will also require careful consideration to ensure each division of transport management can adequately access necessary information. These considerations can be addressed in the ongoing strategic work for the WCG DTPW Transport Hub.

Western Cape Government

Transport and Public Works

WESTERN CAPE FREIGHT STRATEGY

4 WESTERN CAPE FREIGHT STRATEGY

Several issues that impact freight delivery in the Western Cape were identified in the status quo review in Chapter 3. Appropriate interventions are required to address these issues to ensure that freight transport delivery in the Western Cape is consistent with the best practices outlined by principles identified in Chapter 1. This chapter outlines the proposed objectives and actions to address the identified issues in order to initiate a shift to sustainable freight transport delivery in the Western Cape.

4.1 Structure of this Chapter

This chapter is divided into eight (8) sections, of which the first (Section 4.2) outlines the strategy framework adopted in developing the Western Cape freight transport strategy.

The remaining seven sections are organised according to the Strategic Focus Areas identified in Chapter 2. Each section provides a summary of the issues identified in the status quo review and outlines the proposed strategic objectives and actions to address the shortcomings pertaining to a single strategic focus area.

4.2 Strategic Framework

The generic strategic framework adopted for developing the Western Cape freight strategy is presented in Figure 4-1.

Figure 4-1: Adopted strategy framework

The definitions of the elements of the framework in the development of the Freight Strategy are provided below.

4.2.1 Elements of the Strategic Framework

4.2.1.1 Vision – Replaced by Freight Transport Principles

The Western Cape vision for freight transport delivery is the overall state of freight transport delivery that the province aims to achieve over time. The vision sets the

strategic direction and gives purpose to initiatives that the Western Cape Government will undertake to improve freight transport delivery. For the Western Cape Freight Strategy, no dedicated vision statement was developed, and the freight transport principles introduced in Chapter 2 were used as a proxy for a freight transport vision. The freight transport principles are ideals that the Western Cape province aims for and are related to freight delivery best practices. Five (5) freight transport principles were identified through reviewing relevant national, provincial and local transport policy. The principles are:

a. **Freight Transport Network Efficiency** - Several definitions of transport efficiency exist, and the most appropriate one depends on the purpose of study. The definition adopted for this Strategy considers the relationship between productive resources (vehicles, infrastructure, labour etc.) input to the transport system and the resulting capability to satisfy demand. Under this definition, the best freight transport system efficiency is achieved when the fewest productive resources are required to meet certain transport demand. As an example, a network that is congested has low efficiency because the slow movement of vehicles reduces the demand that such vehicles can meet. A less congested network allows faster movement, which increases the demand that can be addressed by certain productive resources, increasing the efficiency of the system.
b. **Inclusive Economic Development** - The Western Cape Government (WCG) aims is to grow the provincial economy and create jobs by providing a conducive environment for businesses. This intention is encapsulated in the **Provincial Strategic Goal (PSG) 1: Creating opportunities for growth and jobs.** Provision of an efficient transport system was identified as one of the key components of the infrastructure and land-use levers for achieving PSG1.

    a. Inclusive economic growth ensures that economic growth is equitable and benefits all regions and leads to creation of opportunities for the marginalised and vulnerable. Provision of freight transport systems therefore must meet the needs of all regions, including the needs of rural regions with potential for economic growth. The Freight Strategy includes initiatives for assessing and meeting such needs.
c. **Freight Transport Network Safety** - The movement of freight has inherent hazards that must be managed to prevent injury to other users of the transport network and damage to equipment, transported goods and infrastructure. While freight transport network safety is an important consideration for all freight transport modes, it is more critical in road freight because of the risk posed to passenger transport users. The Freight Strategy includes initiatives to improve the safety of freight transport delivery in the Western Cape.

d. **Environmental Sustainability** - Environmental sustainability is a state in which the demands placed on the environment can be met without reducing its capacity to allow all people to live well, now and in the future. Freight transport places demands on the environment because of carbon emissions from

hydrocarbon energy sources on all modes. Other negative environmental impacts include noise pollution and land use in the provision of infrastructure such as roads. These negative impacts have a cost on society and must be mitigated. The Freight Strategy includes initiatives for reducing these negative impacts to promote positive freight delivery outcomes.

e. **Cost Optimisation** - Freight transport cost is a key component of cost of goods traded in the economy. As a result, optimising freight transport cost is important in promoting economic competitiveness and improving affordability of goods and services to consumers. The Freight Strategy includes an assessment of freight transport costs and appropriate interventions to optimise the cost.

4.2.1.2 Goals – Replaced by Strategic Focus Areas

Goals are broad outcomes that must be achieved for the vision to be realised. In developing the Western Cape Freight Strategy, no specific freight delivery goals were set. The Western Cape Government and the DTPW have several strategic goals such as the Provincial Strategic Goals (PSGs) and the Departmental Strategic Goals (DSGs). As a result, the creation of new, specific goals for freight delivery was avoided, as such goals would add complexity. Where necessary and appropriate, the existing PSGs and DSGs were referred to during the development of the Freight Strategy. In the Freight Strategy, Strategic Focus Areas replaced goals. Strategic Focus Areas broad themes or areas of attention where notable progress will lead to an improvement in the Western Cape freight transport delivery

4.2.1.3 Strategic Objectives

Strategic objectives are measurable, specific outcomes that support the attainment of strategic goals and consequently the vision. In certain cases, objectives and goals are used interchangeably and the main difference is that objectives are more specific and more measurable than goals. For the Freight Strategy, objectives were developed to address specific issues or groups of related issues identified in the status quo review.

4.2.1.4 Strategic Actions

Strategic actions are initiatives or tasks that must be performed successfully and independently to achieve the strategic objectives. To achieve a strategic objective, at least one strategic action must be performed.

The proposed strategic actions for the Western Cape Freight Strategy, together with the objectives for performing these actions and the underlying freight transport issues being addressed are discussed in the following sections.

4.3 Strategy for Western Cape Freight Planning, Coordination, and Institutional Arrangements

The provision of a safe, reliable, effective, efficient, and environmentally sustainable freight transport network that supports inclusive and sustainable economic development requires adequate planning to improve decision making, understand resources requirements and manage related risks.

In addition, freight transport delivery must balance the needs of several stakeholders across the different spheres of government and in the private sector. This requires appropriate coordination among relevant stakeholders and capacitated institutional structures, through which different parties will perform clearly defined functions to support the delivery of effective freight transport. The status quo review of the Western Cape's freight planning, coordination and institutional arrangements revealed several issues that must be addressed to improve freight delivery outcomes in the province. Strategic objectives and actions were developed to address these issues. The objectives and actions are summarised in Table 4-1.

Table 4-1: Planning, Coordination, and Institutional Arrangements Summary Strategic Programme

Strategic Focus Area 1 - Planning, Coordination, and Institutional Arrangements Strategic Programme	
Strategic Objective	
1A	Strengthen coordination of freight planning and delivery within the DTPW.
Strategic Actions	
1A-1	Review the freight intra-departmental (DTPW) institutional coordination structure and strategy and make amendments where necessary.
Strategic Objective	
1B	Strengthen coordination of freight planning and delivery between the DTPW, other Western Cape Government Departments, Local Municipalities and other external stakeholders, including the National Department of Transport, Transnet and the private sector.
Strategic Actions	
1B-1	Review freight transport provisions for the proposed Provincial Transport Management Forum (PTMF) to ensure that freight coordination between the DTPW, other Western Cape

Strategic Focus Area 1 - Planning, Coordination, and Institutional Arrangements Strategic Programme	
	Government Departments, Local Municipalities and other external stakeholders, including the National Department of Transport, Transnet and the private sector is adequately provided for.
1B-2	Review planning cycles and timelines of transport policy e.g. Provincial Land Transport Framework (PLTF) and strategy to improve alignment with cycles of related policy such as the Provincial Spatial Development Framework (PSDF) and Infrastructure Framework and to ensure that the policies inform one another.
1B-3	Review and amend Terms of Reference for the proposed Transnet Workgroup and identify needs for similar workgroups involving other stakeholders besides Transnet.
Strategic Objective	
1C	Improve capacity of Provincial and Local Government to plan, implement and coordinate freight, including the implementation of the provincial Freight Strategy.
Strategic Actions	
1C-1	Identify the freight transport function support needs of Municipalities and assess opportunities for Province to support where capacity is available, including the introduction of a freight transport support platform if appropriate.
1C-2	Review DTPW's freight organisational design to identify and eliminate functional overlaps and support local Municipalities in doing the same.
1C-3	Prioritise the filling of available positions that are critical to the successful implementation of a Freight Transport Strategy in the Western Cape.
1C-4	Develop appropriate partnerships with the private sector to develop freight competencies in the DTPW.

Strategic Focus Area 1 - Planning, Coordination, and Institutional Arrangements Strategic Programme	
1C-5	Use appropriate performance review and employee surveys to identify freight skills development needs and to enhance education, training and development programmes in the DTPW.
1C-6	Enhance freight skills transfer between WCG staff, Local Municipality staff and outsourced staff.
1C-7	Assess the potential of technology for improving productivity and effectiveness of teams.
1C-8	Encourage and support self-directed, informal learning.
1C-9	Identify additional internal capacity requirements in the DTPW and initiate motivation for these additional resources.

The objectives and actions in Table 4-1 are discussed in greater detail in the sections below. Also included in these sections are the issues being addressed by the strategic actions and objectives. The issues are summarised in these sections, and detailed discussion of the issues is in Section 3.2.

4.3.1 Freight Transport Coordination Within the Western Cape Department of Transport and Public Works

4.3.1.1 Issues in Intradepartmental Coordination

The status quo review of the Western Cape freight transport landscape revealed the following issue regarding coordination of freight in the DTPW.

Issue 1A **Limited coordination of freight transport issues across different Programmes within the DTPW.**

Freight transport planning in the Department is, in some cases, occurring in silos because of the lack of a formal, specific and aligned department-wide approach that facilitates integrated planning and coordination of freight. The lack of alignment leads to duplication of work and content gaps in certain cases. This coordination problem limits the DTPW's ability to develop a coherent freight transport strategy that takes the needs of all stakeholders into consideration to minimise conflict and increase chances of successful implementation of strategic initiatives.

4.3.1.2 Strategic Objectives to Address Issues in Intradepartmental Coordination

Considering the freight coordination challenge within the DTPW discussed above, the following strategic objective is proposed.

Objective 1A	**Strengthen coordination of freight planning and delivery within the DTPW.**

Stronger coordination of freight planning within the DTPW will result in increased ability of the Department to develop and implement a coherent freight strategy. This can primarily be achieved by breaking silos and enhancing information sharing to avoid duplication of initiatives, help to fill content gaps and increase the value of information generated in the Department. The proposed strategic action to strengthen coordination of freight in the DTPW is discussed below.

4.3.1.3 Strategic Action to Achieve Objectives in Intradepartmental Coordination

Action 1A-1	**Review the freight intra-departmental (DTPW) institutional coordination structure and strategy and make amendments where necessary.**

A certain level of freight coordination currently occurs, although this is mainly limited to Departmental Top Management. There is need for lower, operational level, coordination.

Action 1A-1 will include a review of the functions that the different Programmes currently perform to identify areas of overlap and gaps in the freight transport functions. Eliminating functional overlaps will reduce the risk of conflict and duplication of initiatives in the Department. In addition, eliminating overlaps could free up certain staff in the DTPW to perform other functions and this helps to address capacity shortages in the Department.

An improved coordination strategy will include procedures to strengthen communication, ensuring wider departmental awareness of initiatives across Programmes. Apart from reducing duplication of initiatives, improved communication could encourage ongoing internal stakeholder participation in initiatives across Programmes, improving knowledge transfer.

The DTPW is in the process of developing a Transport Management Branch Strategy which, among other goals, seeks to address the lack of an integrated approach to transport and is similar to the strategy proposed under this action. The Branch Strategy is focused on addressing the needs of the Transport Management Branch and a similar strategy for department-wide integration and coordination could be considered going forward. Review of the freight intra-departmental institutional coordination structure and strategy should be inclusive, i.e. stakeholders performing a wide range of functions and of a wide range of seniority levels within the DTPW should be invited to participate and contribute to the process.

Targeted Outcome for Action 1A-1

The main outcome of performing Action 1A-1 is an improvement in coordination of freight transport initiatives to reduce duplication, fill information gaps, improve

information sharing and enhance internal stakeholder engagement in freight transport issues. This will lead to the development of consistent and complimentary freight initiatives across the DTPW Programmes.

4.3.2 Freight Coordination between the DTPW, other Western Cape Government Departments and other Stakeholders

4.3.2.1 Issues in Interdepartmental and External Stakeholder Coordination

The following issues in coordination of freight transport between the DTPW, other Departments in the Western Cape Government and other stakeholders were identified in the status quo review.

Issue 1B	**Limited ongoing, structured coordination of responses to freight transport and related issues across different departments in the Western Cape Government.**

Freight transport has an impact and is impacted by activities of other Departments in the Western Cape Government. These activities include land use and spatial planning, which are primarily in the mandates of DEA&DP, and economic planning, which is a DEDAT function.

The Western Cape Infrastructure Framework (WCIF) 2013, noted that provincial spatial planning is currently done separately from planning in related sectors, such as infrastructure and transport (including freight), and that these different planning processes are not aligned. As an example, the development and review of the Provincial Spatial Development Framework (PSDF), the Provincial Land Transport Framework (PLTF) and the WCIF do not occur in an integrated or aligned fashion. Where coordination does occur, it is generally focussed on project-specific issues, such as the recent development of a Regional Spatial Development Framework (RSDF) for the Cape Metro Functional Region. This coordination does not necessarily lead to ongoing, structured engagement through which cohesive strategy can be developed or implemented.

Issue 1C	**Lack of formal, provincial-level coordinating platforms between the Western Cape Government, National Department of Transport (including its implementing agencies such as South African National Road Agency Limited (SANRAL)), Local Municipalities, Transnet, and the private sector.**

The Western Cape Government has established multi-sector engagement structures organised around achieving the Provincial Strategic Goals (PSGs). These include a Transport Economics Workgroup mandated with coordinating, institutionalising, planning, implementing and reporting of transport matters (including freight) across all stakeholders and between municipalities in support of PSG1: Creating opportunities

for growth and jobs. However, it is not clear whether the Transport Economics Workgroup is empowered to coordinate transport matters beyond strategic discussions related to PSG1. Wider coordination would be necessary for ongoing engagement to address broader transport issues in the Western Cape.

Also, a workgroup for coordinating with Transnet existed in the past, had ceased operating and is now in the process of being reconstituted. No similar workgroups exist for ongoing coordination with other stakeholders, making ongoing engagement and strategic alignment with these stakeholders a challenge.

Another problem in stakeholder coordination is that meetings for existing coordinating fora are not consistently attended by senior representatives, thus limiting the discussion of issues and delaying decision making. Agenda for meetings should be developed in ways that make attendance to these worthwhile for senior decision makers.

In addition, the Western Cape Government currently has no formal structure for coordinating freight issues with national Government, through the Department of Transport (DoT) or its implementing agencies such as SANRAL. In developing this Freight Strategy, consultation made with DoT revealed that there are several initiatives that are ongoing at national level, which have an impact on freight delivery in the Western Cape. However, there is no adequate coordination of these initiatives between the Western Cape Government and DoT to ensure strategy alignment. These initiatives include a national Freight Demand Model (FDM) being developed by DoT, which should be coordinated with the Western Cape FDM being developed for this Freight Strategy. Going forward, improved ongoing coordination of freight matters between the Western Cape Government and DoT is necessary to align strategies and improve the flow of information regarding freight initiatives between national and provincial Government.

The private sector is the main source of demand for freight movement in the Western Cape. Also, private sector operators provide most freight transport services, particularly in the road freight sector and are, therefore, key stakeholders in freight delivery in the province. In addition, only about 50% of freight is outsourced, meaning that freight owners should also be consulted. Implementing initiatives required to improve freight delivery in the Western Cape, including initiatives to promote modal shift, requires strong ongoing coordination with the private sector companies. This could be accomplished by talking to organised trade, industry and specific businesses in the agriculture, mining and manufacturing sector.

4.3.2.2 Strategic Objectives to Address Issues in Interdepartmental and External Stakeholder Coordination

The following strategic objective is proposed to address existing shortcomings in coordination of freight issues between the DTPW, other Western Cape Government departments and other stakeholders. The objective addresses both Issues 1B and 1C above.

Objective 1B	**Strengthen coordination of freight planning and delivery between the DTPW, other Western Cape Government Departments, Local Municipalities and other external stakeholders, including the National Department of Transport, Transnet and the private sector.**

Achieving Objective 1B will enable ongoing coordination of freight transport planning and delivery, beyond coordination that currently occurs on project specific issues. This will allow freight initiatives in the DTPW to align with related initiatives in other Western Cape Government departments, Local Municipalities and DoT.

In addition, achieving Objective 1B will improve the DTPW's ability to coordinate freight issues with key stakeholders such as Transnet. These stakeholders play a key role in providing freight transport services and a lack of coordination with these stakeholders limits the DTPW's influence on their activities, which may negatively impact freight transport outcomes in the Western Cape.

4.3.2.3 Strategic Actions to Achieve Objectives in Interdepartmental and External Stakeholder Coordination

The following strategic actions are proposed to strengthen coordination of freight between the DTPW, other Western Cape Government departments and other stakeholders.

Action 1B-1	**Review freight transport provisions for the proposed Provincial Transport Management Forum (PTMF) to ensure that freight coordination between the DTPW, other Western Cape Government Departments, Local Municipalities and other external stakeholders, including the National Department of Transport, Transnet and the private sector is adequately provided for.**

The PLTF (2016/17 – 2020/21) recommends the creation of a Provincial Transport Management Forum (PTMF) for the Western Cape, to facilitate coordination across all the transport modes, sectors and entities. The PTMF will have a mandate to implement strategic initiatives identified in the PLTF (2016/17 – 2020/21). Work has commenced to establish the PTMF, following the approval of the PLTF (2016/17 – 2020/21).

There is a need to ensure that the Terms of Reference of the PTMF include freight transport coordination in the Western Cape, including coordination of implementation of initiatives in this Freight Strategy. Given its coordination function across modes, sectors and entities, the PTMF will be a key platform for improving overall freight transport coordination and integration in the Western Cape.

In developing the PTMF's Terms of Reference, it is necessary to ensure that the coordination requirements for freight are addressed. In addition, the PTMF's structure should include representation from all key Western Cape Government Departments

whose activities have an impact or are impacted by freight, Local Municipalities, DoT and the private sector. Where necessary, subcommittees or taskforces should be created under the PTMF for focused coordination of certain initiatives with specific stakeholders.

Also, topics to be discussed in the PTMF or its taskforces should be relevant and interesting to encourage senior leadership to attend. Agenda should include items that senior representatives will find valuable.

Targeted Outcome for Action 1B-1

The establishment of the PTMF will provide the Western Cape Government with a platform that brings together different stakeholders in transport delivery in the province. Consistent attendance of senior representatives to this forum could improve its effectiveness as a platform for making key transport decisions for the Western Cape. By incorporating freight transport coordination needs in the PTMF's Terms of Reference, freight initiatives for the Western Cape will be discussed and implemented together with related initiatives in other Departments, ensuring that the different initiatives are aligned and inform one another.

Action 1B-2	**Review planning cycles and timelines of transport policy (e.g. Provincial Land Transport Framework (PLTF) and strategy to improve alignment with cycles of related policy such as the Provincial Spatial Development Framework (PSDF) and Infrastructure Framework and to ensure that the policies inform one another.**

Transport policy has an impact on several policies in the Western Cape Government. To improve policy alignment, related policies must, as much as possible, inform one another and this requires alignment of the planning cycles for the policies. Improving alignment of planning would ideally entail a Western Cape Government-wide review of planning cycles, which requires substantial effort and may be difficult to accomplish because of different departmental priorities. An easier option to improve the alignment of transport, including freight policy, with other Western Cape Government policy is for the DTPW to review its own planning cycles to, as much as possible, align with those of other Departments that develop policies related to transport.

Targeted Outcome for Action 1B-2

The targeted outcome of completing Action 1B-2 is improved alignment of transport, including freight transport, policy with other Western Cape Government policies, ensuring that the different policies inform each other to reduce duplication and inconsistency. This will ensure that transport policy adequately informs related functions such as land-use, spatial and economic planning.

Action 1B-3	**Review and amend Terms of Reference for the proposed Transnet Workgroup and identify needs for similar workgroups involving other stakeholders besides Transnet.**

The DTPW is in the process of re-establishing a Transnet Workgroup to function as a platform for ongoing engagement with Transnet. The workgroup will discuss Transnet initiatives and allow the Western Cape Government, through the DTPW to support Transnet to improve transport, including freight delivery in the province. Coordination in the Transnet Workgroup will be on issues that are more specific than those to be addressed in the PTMF. To re-establish the workgroup, the DTPW will work with Transnet to finalise Terms of Reference for the workgroup, specifying roles, responsibilities and performance indicators.

Besides Transnet, other stakeholders such as SANRAL and the road freight sector have key roles in providing services in the Western Cape and it is necessary to assess the need to develop separate workgroups for focused coordination with these entities. Such workgroups are crucial in improving the DTPW's influence and support to these entities. The risk of increased institutional complexity; however, must be taken into consideration when establishing additional workgroups.

Targeted Outcomes of Action 1B-3

The targeted outcome of Action 1B-3 is an improvement in the DTPW's influence on stakeholders in the freight transport sector in the Western Cape. While the DTPW is ultimately responsible for freight outcomes in the province, the Department relies on initiatives and activities of other parties such as Transnet to achieve its objectives. Improved influence over these entities is, therefore, essential to align provincial freight transport objectives with those of service providers.

4.3.3 Western Cape Freight Institutional Capacity

4.3.3.1 Issues in Western Cape Freight Institutional Capacity

The following issue in freight institutional capacity was identified in the status quo review.

Issue 1D	**Limited freight institutional capacity and expertise at Provincial and Municipal level**

Several approved positions in the DTPW are vacant, partly because of budget caps. Because of the capacity challenges, both the Province and Municipalities are increasingly reliant on outsourcing to plan and implement transport initiatives. The lack of capacity to perform certain functions is limiting the ability to develop and implement freight initiatives. Also, both provincial and local government lack capacity in certain functions, such as rail, and certain skills, particularly in engineering

and this negatively impacts the ability to achieve positive freight transport delivery outcomes.

4.3.3.2 Strategic Objectives to Address Issues in Western Cape Freight Institutional Capacity

Given the capacity issue above, the following strategic objective is proposed.

Objective 1C	**Improve capacity of Provincial and Local Government to plan, implement and coordinate freight, including the implementation of the provincial Freight Strategy.**

Adequate capacity is among the basic requirements to achieve freight objectives in the Western Cape, including successful implementation of this Strategy. The provision of adequate capacity and appropriate skills is, therefore, a key step in getting the basics regarding freight delivery in the Western Cape right.

4.3.3.3 Strategic Actions to Achieve Objectives in Western Cape Freight Institutional Capacity

The following strategic actions are proposed to improve capacity of the DTPW, to achieve freight transport objectives in the Western Cape.

Action 1C-1	**Identify the freight transport function support needs of Municipalities and assess opportunities for Province to support where capacity is available, including the introduction of a freight transport support platform if appropriate.**

The Provincial Sustainable Transport Programme (PSTP, formerly Provincial Public Transport Institutional Framework (PPTIF)) Strategic Report made recommendations that address some of the challenges related to inadequate institutional capacity in local municipalities. These recommendations include the centralisation of certain transport functions at provincial level. In this approach, the DTPW will provide a platform, where certain functions are performed centrally. This precludes the provision of certain capacity at local level and helps to optimise capacity utilisation by allowing resources to be shared among several Municipalities. Considering that freight movement in the Western Cape is largely concentrated in regions such as the Cape Metro area, most local municipalities may not need dedicated capacity for certain freight transport functions and could, therefore, benefit from having access to a central pool of resources. In performing Action 1C-1, the main tasks are identifying capacity needs in local Municipalities, determining the functions that can be performed centrally and developing a strategy for utilising the pooled resources to support municipalities.

Targeted Outcomes of Action 1C-1

Successfully performing Action 1C-1 will enable the DTPW to fulfil its mandate of supporting municipalities to perform freight transport functions, including the development of local freight strategies where required. Centralising certain functions leads to economies of scale from pooling resources to perform freight functions in the province. Also, performing functions centrally could result in improved alignment of strategic initiatives in the province, considering that a core team will perform certain functions and can, therefore, easily share information and coordinate issues better than separate teams working in Municipalities.

Action 1C-2	**Review DTPW's freight organisational design to identify and eliminate functional overlaps and support local Municipalities in doing the same.**

As discussed in Section 4.3.1.1, there are cases where functional overlaps exist in the DTPW. Eliminating functional overlaps could result in reduced duplication of work, which frees up certain capacity to perform other functions. This action will involve assessing the current DTPW structure to identify opportunities to reduce or eliminate overlaps to optimise capacity and avoid the creating or filling certain positions. Action 1C-2 is closely aligned with Action 1A-1 and the two must be coordinated. In addition to reviewing the structure of the DTPW, there is need to support local Municipalities in doing the same, to improve capacity utilisation in local government.

Targeted Outcome of Action 1C-2

The primary output of performing Action 1C-2 is a list of functional overlaps and gaps and proposals for reallocation of certain functions to eliminate overlaps. The outcome of eliminating overlaps is improved utilisation of existing freight institutional capacity at Provincial and Local Government.

Action 1C-3	**Prioritise the filling of vacant positions that are critical to the successful implementation of a Freight Transport Strategy in the Western Cape.**

Whilst it is acknowledged that funding for additional staff is very limited at provincial and local level, certain positions require priority because they are critical to the successful implementation of the Western Cape Freight Strategy. Among these are rail skills at both the provincial and local sphere of government. These skills need prioritisation, given the road-to-rail shift imperative for both freight and passenger transport.

The freight function in the DTPW is not fully developed and general freight transport expertise, including freight transport planning is required to improve freight outcomes and coordination with the freight industry in the Western Cape. Other valuable skills

include macro logistics expertise, which includes logistics planning, policy and integration with infrastructure and spatial planning.

Targeted Outcome of Action 1C-3

Performing Action 1C-3 will improve the DTPW's ability to perform its freight transport functions, support local government freight functions and coordinate with service providers. This action is important in ensuring successful implementation of this Freight Strategy.

Action 1C-4	**Develop appropriate partnerships with the private sector to develop freight competencies in the DTPW.**

Certain freight skills that the DTPW requires already exist in the private sector, where companies invest in the development of such skills to remain competitive. The DTPW could take advantage of the private sector skills development initiatives by developing appropriate public-private partnerships through which skills can be transferred without the need for considerable spending on skills development programmes. This could include sending DTPW officials on training programmes that are sponsored by private sector companies and providing job shadowing opportunities for DTPW staff to develop certain skills.

An option for promoting partnerships with the private sector in freight skills development is a Centre of Excellence. Such a centre could be developed in coordination with parties such as the Cape Higher Education Consortium (CHEC) or other Western Cape higher education institutions.

Targeted Outcome of Action 1C-4

Performing Action 1C-4 successfully will result in an improvement in freight capacity and a reduction in the cost for developing capacity in Government.

Action 1C-5	**Use appropriate performance review and employee surveys to identify freight skills development needs and to enhance education, training and development programmes in the DTPW.**

The DTPW has an existing performance review system, which is used to determine professional development needs for staff. The freight function in the DTPW is growing and it is necessary to incorporate freight transport in skills development programmes. The specific freight skills needs could be identified through performance review or surveys of staff performing freight functions in the DTPW. The DTPW has an ongoing Organisation Development project, which could also be used to develop freight transport skills. Performing this action will involve listing key freight transport skills needs, justifying why these skills are important and motivating for resources e.g. funding to develop the skills. The skills could be developed using approaches such as public-private partnerships to be developed in Action 1C-4 above.

Targeted Outcome of Action 1C-5

The main outcome of Action 1C-5 is improved information on the freight skills gaps in the DTPW as a first step in developing interventions to develop skills and improve Government's capacity to perform its freight functions.

Action 1C-6	**Enhance freight skills transfer between WCG staff, Local Municipality staff and outsourced staff.**

The lack of capacity at both local and provincial government has resulted in reliance on outsourcing of certain transport, including freight transport tasks. There are opportunities to take advantage of the skills and expertise of specialists working for the DTPW and develop skills transfer programmes. The DTPW has started to encourage skills transfer between its staff and contacted specialists. However, the current skills transfer efforts are not guided by a formal strategy or programme. There is need for a strategy that enhances skills transfer, and this can include adding skills transfer in the terms of contracts between the Department and contracted specialists. Skills transfer could become one of the key indicators of successful delivery of outsourced projects, ensuring that contracted specialists invest time and effort to transfer knowledge to Government staff.

Targeted Outcome of Action 1C-6

Performing Action 1-A6 will result in a steady improvement in capacity in the DTPW to reduce reliance on contacted specialists in the long term. The main benefit will be in tasks that must be performed repeatedly in Government. An example of such tasks is the updating of a Freight Demand Model (FDM) being developed with this Freight Strategy. If skills to update the FDM are successfully transferred to DTPW staff, future updates will be done internally, without the need for contracted specialists, which could reduce cost to Government.

Action 1C-7	**Assess the potential of technology for improving productivity and effectiveness of teams.**

An improvement in staff productivity could help to optimise existing capacity, in some cases making it unnecessary to increase the DTPW's staff complement to fulfil certain functions. Suitable technology could be useful in improving staff productivity by making teams work better and faster. In performing Action 1C-7, an assessment of the areas where technology provides benefit in the DTPW will be conducted. Such areas include data collection, which is manual in certain cases and could be improved by automation. This action must be coordinated with actions under the technology and innovation strategic focus area discussed in Section 4.8.

Targeted Outcome of Action 1C-7

Preforming Action 1C-7 will result in improved information on the technology options that the DTPW could consider in improving staff productivity, optimising capacity and reducing cost. This information, which should include cost and benefit analysis of the different options will be used to motivate funding for suitable technology.

Action 1C-8	**Encourage and support self-directed, informal learning.**

Self-directed, informal learning is not organised or planned and occurs through daily interactions. The DTPW could encourage informal learning through increasing awareness of the approach and where appropriate developing self-directed learning guidelines and promoting a learning culture e.g. a culture where staff receive regular feedback. Informal learning is enhanced by access to information e.g. transport industry literature that staff can review in their own time. Encouraging informal learning leads to skills development without the need to invest in organised training events. Also, informal learning can be enhanced by improved coordination in the DTPW e.g. allowing information to be easily exchanged across Programmes will result in staff in certain Programmes developing an interest in work being done in other Programmes, which supports ongoing learning.

Targeted Outcome of Action 1C-8

The targeted outcome of Action 1C-8 is a learning culture through which staff develops certain skills without the need for organised training. This minimises the cost of skills development and encourages ongoing engagement through which staff remain up to date with trends in the freight transport industry.

Action 1C-9	**Identify additional internal capacity requirements in the DTPW and initiate motivation for these additional resources.**

Additional resources could be required to perform the actions in the Freight Strategy, and the DTPW needs to develop information on these capacity requirements. The provision of adequate capacity will improve the DTPW's ability to deliver on the strategic objectives and actions.

Targeted Outcome of Action 1C-9

The targeted outcome of Action 1C-8 is improved ability of the DTPW to implement strategic actions in the Freight Strategy to ensure positive freight outcomes in the Western Cape.

4.4 Strategy for Western Cape Freight Demand Management

From a market economy point of view, freight movement will occur when the spatial availability of goods does not meet the demand, requiring goods to be transported from the area of production to the area of consumption. This misalignment between demand and supply can occur on a local, regional, national and international level, generating associated freight movement.

Historically, there has been a close relationship between the growth in freight transport and economic growth, as measured by Gross Domestic Product (GDP) (Banister & Stead, 2002). Growth in economic activity has, in most cases, been accompanied by a proportional increase in freight transport demand.

In South Africa, the demand for freight transport is disproportionately high owing to industrial development far from ports, low local beneficiation and a suboptimal modal balance. Historical freight transport policy supported primary economic development, failing to pre-empt the changing economic structure and the subsequent freight transport needs, resulting in excessive freight transport costs and externalities

As the South African and Western Cape economies continue to grow, the demand for freight transport is projected to increase. The Western Cape Infrastructure Framework states that the demand for general freight transport in the province is projected to grow at one (1) percentage point above the economic growth rate. A major cause of this demand problem is the existence of many links in the supply chain that are unnecessarily removed from each other. This causes double handling, short pickup and delivery trips, missed slot times which lead to unnecessary trips, higher congestion and additional logistics costs. Transport intensity growth, in this case without additional GDP output growth is a problem.

Freight demand growth of this nature is not necessarily sustainable, given the current freight transport trends, including the current share of freight carried by road. An increase in freight transport demand leads to several negative impacts such as increasing energy use, Greenhouse Gas (GHG) emissions, heavy vehicle traffic accidents and excessive cost of maintaining road infrastructure. To initiate a more sustainable freight development trajectory, a shift to an approach that includes proactive management of freight demand is necessary. Such an approach aims to minimise the need for certain movement of materials and finished goods and can be likened to Travel Demand Management (TDM) in public transport.

As a result, initiatives to more effectively manage demand for freight transport, even as economies grow, are increasingly receiving attention. At the core of these initiatives is an attempt to understand the means through which the relationship between freight transport growth and economic growth can be decoupled. When decoupling is achieved, economic growth may not necessarily be linked to a corresponding increase in the demand for freight transport.

Case Study 4-1: United States freight intensity reduction

In the United States (US) Freight Transport intensity in terms of ton-mile per unit of GDP has been decreasing since the 1960s (Gilbert and Nadeau, 2002). The US DoT Bureau of Transportation Statistics indicates that the ratio dropped from 0.59 ton-miles per dollar of GDP in 1970 to 0.38 ton-miles per dollar of GDP in 2002 (as measured in 2000 dollars). This suggests an increase in freight transport productivity. However, this decline may also be due to GDP growing at a faster rate than growth in freight transportation. Changes to the ratio reflect both macro level driving forces (e.g., the shift in the structure of the economy from goods to more services) and micro level factors (e.g., changes in freight rates, time in transit and accessibility to ports). (US DoT Bureau of Transportation Statistics, 2004)

The status quo review for the Western Cape freight transport demand management revealed several issues. Strategic objectives and actions have been developed to address these issues. The strategic objectives and actions are summarised in Table 4-2.

Table 4-2: Demand Management Summary Strategic Programme

Strategic Focus Area 2 - Demand Management Strategic Programme	
Strategic Objective	
2A	Improve information available to the Western Cape Government regarding freight demand management opportunities in the province.
Strategic Actions	
2A-1	Conduct annual update of the Western Cape Freight Demand Model, including the incorporation of local value addition and beneficiation scenarios to quantify the freight demand benefits of the initiatives and use its insights to influence in favour of positive freight outcomes.
Strategic Objective	
2B	High and increasing freight transport intensity of the Western Cape province.
Strategic Actions	

Strategic Focus Area 2 - Demand Management Strategic Programme	
2B-1	Support DEDAT and DoA to implement local beneficiation and value addition initiatives to reduce demand for long distance freight, where possible.
2B-2	Integrate freight transport and spatial planning, working with DEA&DP, to reduce future demand for certain freight.
2B-3	Identify opportunities to support DEA&DP in developing waste minimisation programmes in the Western Cape.
Strategic Objective	
2C	Improve productivity in the freight industry by enhancing the Western Cape Government's support of appropriate freight industry productivity initiatives.
Strategic Actions	
2C-1	Engage the road freight industry to identify and support initiatives, technology and innovation for improving the sector's productivity e.g. finalising PBS and developing a position on High Cube, where such initiatives align with the strategic objectives of the Freight Strategy.

The strategic actions and objectives in Table 4-2 are discussed in greater detail in the sections below. Also included is a brief discussion of the issues that the strategic objectives and actions address.

4.4.1 Information on Western Cape Freight Demand Management Opportunities

Given the growth in the demand for freight in the Western Cape as discussed above, demand-side measures are required to initiate a sustainable approach to freight transport delivery in the province. In developing demand management measures, information on opportunities to reduce the demand of freight is necessary. The status quo review revealed shortcomings in the information available in the Western Cape to provide evidence needed to develop or support certain demand-side initiatives. These challenges are discussed below.

4.4.1.1 Issues in Information on Western Cape Freight Demand Management Opportunities

The status quo review of the Western Cape freight transport landscape highlighted the following issue regarding information on freight demand management opportunities.

Issue 2A	**Limited information on freight demand management opportunities in the province.**

Measures that are useful in managing demand for freight include local value addition, beneficiation and improved integration of transport and spatial planning to reduce the need to move goods and the distances over which goods are moved. While local value addition and beneficiation initiatives exist in the Western Cape, these have generally been approached from an economic development viewpoint. The economic development viewpoint emphasises the need to increase the economic value of raw commodities (produce and minerals) to improve the commodities' contribution to the local economy and create jobs. There are opportunities to take advantage of these initiatives to manage the growth in demand for certain types of freight movement. Such opportunities have not been adequately assessed in the Western Cape. The quantification of the freight demand management benefits of local value addition, beneficiation and spatial planning could provide the DTPW with the information required to influence these initiatives to achieve sustainable freight transport provision.

4.4.1.2 Strategic Objectives to Improve Information on Freight Demand Management Opportunities

The following objective is proposed to address the existing shortcomings in information regarding freight demand management opportunities in the Western Cape.

Objective 2A	**Improve information available to the Western Cape Government regarding freight demand management opportunities in the province.**

An improvement in the freight demand management information available to the DTPW is important in developing data-driven freight demand management strategies to initiate sustainable freight transport delivery. An understanding of the opportunities to reduce the demand of certain freight movement puts the DTPW in a better position to influence other Departments such as DEDAT and DEA&DP in developing initiatives that have an impact on freight demand in the province.

4.4.1.3 Strategic Actions to Improve Information on Freight Demand Management Opportunities

The following strategic action is proposed to improve information on freight demand management opportunities in the Western Cape.

Action 2A-1	**Annual update of the Western Cape Freight Demand Model, including the incorporation of local value addition and beneficiation scenarios to quantify the freight demand benefits of the initiatives and use its insights to influence in favour of positive freight outcomes.**

Initial work to develop a Western Cape FDM was conducted concurrently with the development of this Freight Strategy. The FDM includes an assessment of demand management options such as local value addition and beneficiation to quantify the benefits that such interventions could provide in the Western Cape. It also includes demand forecasts for several growth scenarios. The FDM will be updated annually and must be reviewed to align with other economic modelling such as that conducted by DEDAT and DoT.

Targeted Outcomes of Action 2A-1

The primary output of Action 2A-1 is an FDM incorporating demand management scenarios. The outcome of performing the action is improved ability of the DTPW to develop fact-based freight demand management strategies and to use data to influence other departments that have an influence on freight transport in the Western Cape.

4.4.2 Western Cape Freight Transport Intensity

4.4.2.1 Issues in Western Cape Freight Transport Intensity

Freight transport intensity is the ratio of freight transport demand (measured in tonne kilometres) and the economic output measured by Gross Domestic Product (GDP). To more accurately the impact of freight demand in an economy, the ratio is in some cases calculated using the transportable (physical) GDP e.g. GDP component of the mining, agriculture and manufacturing sector. These sectors are responsible for most of the freight demand and cost e.g. South Africa logistics costs as a percentage of total GDP is around 12%, but logistics costs as percentage of transportable GDP is as much 55%. Given the negative impacts of freight transport on society and the environment, low freight intensity (for the same level of output) is desirable. The following freight transport intensity issue was identified during the status quo review.

Issue 2B	**High and increasing freight transport intensity of the Western Cape province.**

In 2012 the Western Cape province was responsible for 18% of South Africa's freight transport demand, measured in tonnes of freight transported and 39% [28] of the country's freight transport demand measured in tonne-kilometres (Havenga, Goedhals-Gerber, & van Eeden, 2014). In that year, the Western Cape contributed

[28] The high freight demand for the Western Cape in tonne-kilometres is a result of the province's geographical location, far from other centres of economic activity.

14% of South Africa's GDP (Havenga, Goedhals-Gerber, & van Eeden, 2014). The Western Cape's higher contribution to freight demand compared to the province's contribution to GDP indicates high freight transport intensity. Considering that the Western Cape's freight demand has been increasing faster than the province's economic growth rate, its freight transport intensity may continue to rise. Therefore, initiatives to manage the Western Cape's freight intensity are necessary going forward to improve the sustainability of freight transport provision in the province.

4.4.2.2 Strategic Objectives to Address Issues in Western Cape Freight Transport Intensity

Considering the high and increasing freight transport intensity for the Western Cape and the need to initiate sustainable freight transport delivery, the following objective is proposed:

Objective 2B	**Minimise the Western Cape's freight transport intensity by promoting and supporting appropriate freight transport demand-side management measures.**

Initiatives to minimise the freight intensity of the Western Cape could lead to more sustainable economic growth by ensuring that demand for freight transport and related negative impacts are minimised. Demand-side management measures include local value addition and beneficiation, which were introduced in Section 4.4.1 and which reduce the demand for certain types of freight movement. Other initiatives include improved spatial planning, through which certain freight movement is reduced.

It is noted, however, that minimising freight transport intensity generally takes long and Objective 2B will be achieved in the long term. This is because of the long time it takes to develop initiatives such as local value addition and beneficiation and for the impact of improvements in spatial planning to have positive impacts on freight demand management. In addition, a reduction in freight intensity could occur because of changes in the structure of the province's economy e.g. the growth of the service sector, which is less freight intensive could result in lower freight intensity in the long term.

4.4.2.3 Strategic Actions to Address Issues in Western Cape Freight Transport Intensity

The following actions are proposed to minimise the freight transport intensity of the Western Cape over time.

Action 2B-1	**Support DEDAT and DoA to implement local beneficiation and value addition initiatives to reduce demand for long distance freight, where possible.**

Local value addition and beneficiation could reduce the demand for certain types of freight movement leading to lower freight intensity in the long term and the development of these initiatives is primarily led by DEDAT and in certain cases DoA. Both these departments develop these initiatives from an economic development viewpoint. DTPW primarily supports these departments and, therefore, has an indirect role in most value addition and beneficiation initiatives in the Western Cape. In performing Action 2B-1 action, DTPW must engage DEDAT and DoA to participate in the planning and implementation of value addition and beneficiation initiatives and use such participation to influence in favour of freight transport outcomes. Information on freight demand reduction opportunities from Action 2A-1 will be useful to highlight the freight transport benefits of the value addition and beneficiation initiatives.

Targeted Outcome of Action 2B-1

Performing Action 2B-1 will result in the incorporation of freight perspectives in existing and future local value addition and beneficiation initiatives, which will lead to a reduction in the demand for certain long-distance freight in the long term.

Action 2B-2	**Integrate freight transport and spatial planning, working with DEA&DP, to reduce future demand for certain freight.**

Spatial planning could be used to optimise the demand of freight by improving the location of future industrial hubs to match demand and supply of raw material and finished goods. In addition, spatial planning could be used to improve access of future economic centres to facilities such as ports, reducing the distances that freight travels to and from the ports. Another opportunity is in densifying industrial hubs, where possible, which makes infrastructure such as branch lines viable to reduce the reliance on road freight in moving certain freight. Better coordination of freight transport and spatial planning could, therefore, have positive impacts on freight transport demand. DTPW needs to engage DEA&DP to provide regular input into spatial planning in the Western Cape, providing freight perspectives to optimise freight transport demand in the long term. Data from the FDM scenario analysis could be used to guide fact-based discussions on integrating freight demand management and spatial planning.

Targeted Outcome of Action 2B-2

Performing Action 2B-2 will lead to improved matching of future demand and supply of goods in the economy and, in the long term, this will reduce the need for certain movement of goods, leading to a reduction in freight transport demand and intensity.

Action 2B-3	**Identify opportunities to support DEA&DP in developing waste minimisation programmes in the Western Cape.**

The movement of waste is responsible for significant freight transport demand in the Western Cape and minimising the amount of waste generated could reduce freight transport demand and intensity in the province.

Waste minimisation initiatives are primarily a function of DEA&DP and DTPW mainly has a supporting role. Supporting DEA&DP in developing waste minimisation initiatives is, however, in the interest of DTPW as increased waste minimisation reduces the demand for certain freight movement and this is consistent with DTPW's freight intensity reduction objectives. In performing Action 2B-3, DTPW will use appropriate forums to identify DEA&DP's needs for support in developing waste minimisation initiatives and provide such support, where possible.

Targeted Outcomes of Action 2B-3

Action 2B-3 will result in improved ability of DEA&DP to develop and implement waste minimisation initiatives, leading to a reduction in freight transport demand from the movement of waste. In the long term, this freight demand reduction will minimise freight transport intensity in the Western Cape.

4.4.3 Western Cape Road Freight Industry Productivity

Improving the productivity of the road freight industry could result in a reduction in the number of heavy vehicle goods and kilometres driven on Western Cape roads and this lowers the negative externalities of road freight transport. Initiatives for road freight industry productivity include Performance Based Standards (PBS) that are currently under consideration by both the National Department of Transport and the Western Cape Government, improvements in vehicle load factors and a reduction in the number of freight transport vehicles running empty. While the benefits of high road freight industry productivity in managing the demand for freight are clear, shortcomings exist in promoting productivity of the road freight industry in the Western Cape and these are discussed below.

4.4.3.1 Issues Impacting Western Cape Road Freight Industry Productivity

The main road freight industry productivity issue identified during the status quo review is:

Issue 2C	**Lack of a provincial strategy for promoting or supporting productivity initiatives of the road freight industry.**

The Western Cape Government currently has no formal, structured approach to working with the road freight industry on productivity initiatives. Government's involvement in industry productivity initiatives has been on a project-specific basis, such as the ongoing discussions around PBS. Greater Government support of industry productivity initiatives requires an appropriate plan that facilitates ongoing engagement with industry regarding productivity.

4.4.3.2 Strategic Objectives Address Issues in Western Cape Road Freight Industry Productivity

Given the issue in the Western Cape road freight industry productivity, the following objective is proposed.

Objective 2C	**Improve productivity in the freight industry by enhancing the Western Cape Government's support of appropriate freight industry productivity initiatives.**

Most of the existing road freight industry productivity initiatives are led by private sector operators and support from the Western Cape Government could lead to wider adoption of the initiatives. Also, the Western Cape Government needs to be aware of these industry-led initiatives to determine regulatory requirements or to assist in the setting of appropriate standards for the interventions. In addition, Government funded research could improve information on productivity initiatives and innovation that could be adopted. This could be coordinated with work to develop a freight technology roadmap as proposed in Section 4.8.

4.4.3.3 Strategic Actions to Improve Western Cape Freight Industry Productivity

The following strategic action is proposed to improve the Western Cape Government's support of road freight industry productive initiatives.

Action 2C-1	**Engage the road freight industry to identify and support initiatives, technology and innovation for improving the sector's productivity e.g. finalising PBS and developing a position on High Cube, where such initiatives align with the strategic objectives of the Freight Strategy.**

The road freight industry in South Africa and in the Western Cape is active in developing productivity initiatives because of the competitive nature of the sector. As a result, the sector may already understand productivity options to consider, and Government could provide support in developing the initiatives. Examples of initiatives and technology that could be considered include:

- Increasing awareness of the need to maximise load factors;
- Eliminating unnecessary trips e.g. through better scheduling and cooperation;
- Investigating greater use of containerisation for local deliveries, thereby reducing loading and offloading times and increasing the potential for off-peak deliveries since containers can be delivered outside business hours. Goods delivered in containers are offloaded for packing when receiving staff has resumed work in normal business hours; and
- Development of a platform to enable truck operators to easily find return loads to avoid running empty trucks.

Another productivity initiative under consideration in the road freight sector is Performance Based Standards (PBS) which includes the use of high productivity vehicles. The Western Cape Government is carrying out an assessment of PBS to determine whether high productivity vehicles could be permitted in the province. Concluding the assessment is necessary for industry to make decisions regarding investing in high productivity vehicles.

The road freight sector has invested significantly in High Cube containers, which have productivity advantages but do not comply with current South African road traffic laws. An exemption granted by the National Department of Transport (DoT) for the road freight industry to use these containers expires in December 2018 and a policy position is required for industry to decide on the next steps. During consultation with the DoT it was indicated that work is ongoing at national level to determine the next steps regarding the use of High Cube containers in South Africa. While this work is conducted, the Western Cape Government could consider consulting the road freight sector in the province to understand the impact of banning High Cube in South Africa and to develop insights to influence the work being done at national level. Also, the Western Cape Government could develop models to quantify the cost advantages and disadvantages of alternatives to High Cube to facilitate discussions with industry and DoT. A certain level of informal consultation has been conducted in the province although this has not led to a formal Western Cape Government position on High Cube containers.

Targeted Outcomes of Action 2C-1

The output of Action 2C-3 is a shortlist of road freight industry initiatives that industry could develop with Government support and research on productivity initiatives. Government support will be in the form of policy, appropriate regulation, funding or lobbying national Government. The outcome of performing the action is wider adoption of productivity initiatives in the road freight sector, which will lower demand for certain freight movement and reduce freight cost and externalities.

4.5 Strategy for Western Cape Freight Transport Modal Rebalancing

Moving goods on the appropriate transport mode is a key step towards optimising freight transport delivery. While the long-term approach is to reduce the material intensity of the economy and freight transport, such a state cannot be reached quickly. Therefore, alternative strategies are required to improve freight delivery in the short to medium term. Finding the optimal modal balance, based on the freight system needs and limitations, to achieve system efficiencies is one such strategy. This is necessary to ensure that all competing modes of transport achieve market shares in accordance with their comparative cost advantages. When that is achieved, the freight transport costs to the provincial economy are optimised.

According to freight demand planning forecasts and associated data by Transnet, goods most suited to being transported by road include perishable items, such as dairy and livestock, as well as deciduous fruit, pharmaceuticals and fast-moving consumer goods. These goods are classified as general cargo, defined as freight which is not of a bulk nature; encompassing a very broad range of products, and differentiated from bulk freight by being either fragile, perishable, valuable or constituting low volumes. Opportunities exist, however, to move this type of cargo by rail and this could be accomplished by changing the packaging. Unitising these goods e.g. by containerisation makes them suitable for transport by rail. This is more appropriate when the volumes to be transported are large and the travel distance is long. The Western Cape's trade characteristics make it an ideal candidate for such solutions and this could lead to considerable modal shift from road to rail. Also, growth in domestic intermodal solutions could improve modal shift.

Bulk liquids, other mining products, cement and chemicals are more suited to rail freight. In the Western Cape, the bulk of export coal, export iron-ore, export manganese and domestic coal are highly suited to being transported by rail. Rail offers advantages in the movement of bulk and unitised (e.g. palletised) commodities over long distances. In such applications of rail, the achievable flow densities provide economies of scale, thereby lowering unit costs. Transporting rail-friendly freight on rail rather than road reduces logistics costs, and impacts positively on the road network, whilst reducing the transport sector's carbon emissions.

The Transnet classification of commodities suitable for certain modes is consistent with the DoT's classification, summarised in Figure 4-2.

Food and food processing	Maize	Barley
Beverages	Soya beans	Cotton
Tobacco products	Sunflower seed	Deciduous fruit
Textiles, clothing, leather products and footw	Vegetables	Subtropical fruit
Wood and wood products	Wheat	Viticulture
Furniture	Poultry products	Grain sorghum
Paper and paper products	Dairy	Livestock (slaughtered)
Printing and publishing	Sugar cane	Motor vehice parts and accessorises
Industrial chemicals	Other agriculture	Transport equipment
Fertilizers and pesticides	Coal mining	Other manufacturing industries
Pharmaceuticals, detergents and toiletries	Crude petroleum and natural gas	Water supply
Petroleum refined/products of petroleum/co	Iron ore (hematite)	Methane-rich gas
Rubber products	Magnetite	Avitaion fuel
Other chemicals	Chrome	Not listed as a commodity
Non-metallic mineral products	Copper	Container traffic full nett tonnage
Bricks	Manganese	Coal mining export/import
Cement	Titanium	Iron ore (hematite) export
Ferrochrome	Zinc	Manganese export
Ferromanganese	Other non-ferrous metal mining	
Other iron and steel basic industries	Stone quarrying, clay and sand-pits: granite	
Non-ferrous metal basic industries	Limestone and lime works	**Simplified Preferrence**
Metal products excluding machinery	Stone quarrying, clay and sand-pits: other	Road friendly
Machinery and equipment	Mining of chemical and fertilizer minerals	Road and rail friendly
Electrical machinery	Other non-metallic mineral mining	Rail friendly
Motor vehicles	Other mining	Pipeline friendly

Figure 4-2: Commodities and appropriate transport modes *(National Department of Transport, 2011)*

While the classification of commodities according to their most appropriate modes is clear, in several cases certain commodities are not transported using the most appropriate modes and this results in a modal split that is not optimal.

Strategic objectives and actions were developed to address the modal split issues in the Western Cape. The objectives and actions are summarised in Table 4-3.

Table 4-3: Modal Rebalancing Strategic Programme Summary

Strategic Focus Area 3 - Modal Rebalancing Strategic Programme	
Strategic Objective	
3A	Optimise the freight modal share for the Western Cape.
Strategic Actions	
3A-1	Use a Western Cape Freight Demand Model (FDM) to Quantify freight that is currently transported by road and can be shifted to alternative modes and use the output to set modal shift targets in the province.
3A-2	Develop a monitoring tool for tracking progress towards modal shift targets in the Western Cape province.
3A-3	Use information on the full cost, including externality costs, of different modes to develop and implement programmes to improve industry awareness of the negative impacts of road

Strategic Focus Area 3 - Modal Rebalancing Strategic Programme	
	freight to encourage the adoption of rail for moving appropriate freight.
3A-4	Develop a suitable, adaptable tool and dashboard based on the outputs of the Freight Demand Model (FDM) to monitor all important metrics, including freight logistics and externality costs.
3A-5	Assess policy (e.g. user charging), incentives or regulation for promoting the shift of freight from road to alternative modes and implement suitable options to enhance modal shift in the province.
3A-6	Support the development of more waste-on-rail projects in the Western Cape in partnership with DEA&DP, local Municipalities, Transnet and the private sector.
3A-7	Conduct a survey to determine user perceptions regarding rail and use appropriate information and awareness campaigns to change perceptions.

The strategic objectives and actions for freight modal rebalancing are discussed in detail in the sections below.

4.5.1 Western Cape Freight Transport Modal Split

Most freight in the Western Cape is moved by land transport. Road and rail are the most widely used modes because they are the most accessible and most commodities transported in the provinces are suited to these modes. However, the modal split between these two modes is not optimal and interventions are required to improve on this.

4.5.1.1 Issues in the Western Cape Freight Transport Modal Split

The key modal split issue in the Western Cape is:

Issue 3A	**Road freight transport dominance even in the movement of freight more suited to other modes.**

In line with the rest of South Africa, road freight dominates the land freight transport landscape in the Western Cape. In 2012, an estimated 19% of freight (in tonnes) transported on the corridors in the Western Cape was considered rail friendly; however, rail had a 6% freight market share, indicating that more than 68% of rail friendly cargo in the Western Cape was transported using other modes (Havenga, Goedhals-Gerber, & van Eeden, 2014). Most of the rail friendly cargo was transported by road. The dominance of road freight transport leads to high freight transport costs

and externalities. Initiatives to support the shift of certain freight from road to alternative modes are, therefore, important in improving the sustainability of freight transport provision in the Western Cape.

The dominance of road freight is a result of several sub-issues discussed below.

- **Lack of specific policy to promote modal shift, particularly from road to other modes:** Currently market factors have the most influence on user preferences for certain freight transport modes. Such factors include the cost competitiveness of modes. However, freight transport pricing in South Africa and in the Western Cape does not reflect the full cost including externalities. As a result, cost competitiveness is skewed in the favour of road freight transport which generates the most externalities. Policy tools that apportion some of the externality costs could reduce the unfair cost advantage that road currently has and promote the use of alternative modes for transporting suitable freight. Incentives to promote the use of certain modes are also among the options for consideration in promoting modal shift and none currently exist in the Western Cape.
- **Limited information on modal shift opportunities in the Western Cape to support modal shift strategy**: An understanding of the potential that all key freight transport modes offer is necessary to develop strategies to optimise the freight modal split in the Western Cape. A study titled Identification of Key Target Markets for Intermodal Freight Transport Solutions in South Africa was conducted by Stellenbosch University in 2010 and included the quantification of opportunities for road-to-rail modal shift on the Western Cape corridors. However, the study needs updating and expansion to include other modes, particularly coastal shipping which could play a key role in the Western Cape.
- **Inadequate understanding and monitoring of the province's freight logistics and externality cost:** The direct and externality costs of road freight transport are generally higher than those of alternative modes. While freight logistics and externality data was sourced during the status quo assessment, most of the data available at the time was not up to date. Also, the Western Cape Government does not have a formal, structured approach to monitoring logistics and externality costs. Going forward, ongoing monitoring of the Western Cape province's freight logistics and externality costs will be valuable in communicating the negative impacts of road freight, thereby increasing awareness and promoting the use of alternative modes. In addition, improved logistics and externality costs data is important input in the development of policy to transfer such cost to users where appropriate. Also, monitoring freight externality changes over time is useful in determining the impact of strategic interventions to limit the negative impacts of freight transport in the Western Cape.
- **Inadequate investment in rail-based solutions:** The development of a framework for Public Private Partnerships (PPPs) could be beneficial to help support adequate investment in rail-based solutions. There are a few small

examples of rail-based solutions in the Western Cape, but these need to be supported. The Western Cape Province could look to develop a policy to promote the development of rail-based solutions.

4.5.1.2 Strategic Objectives to Address Issues in the Western Cape Freight Transport Modal Split

Shifting road freight to other modes is important in reducing the negative impacts of road transport in the Western Cape. It is, therefore, crucial to explore opportunities to support the shift of freight to other modes such as rail and coastal shipping, where appropriate. As a result, the following objective is proposed:

Objective 3A	**Optimise the freight modal share in the Western Cape.**

While the shift of freight from road to other modes will improve freight delivery in the Western Cape, the shift of freight to rail is a priority considering that the mode is suited to more commodities than those suited to modes such as air, pipeline and coastal shipping. Shifting freight to rail could have a greater impact in the short to medium term. Optimising the freight modal share in the Western Cape could improve sustainability of freight transport delivery in the province. This is because moving more freight to other modes, particularly rail, where possible, will:

- Minimise the cost of freight transport, e.g. by reducing road infrastructure maintenance; and
- Minimise freight transport externalities, considering that rail has lower externalities than road.

Most of the work to develop the sectors such as rail is the responsibilities of SOEs e.g. Transnet and the Western Cape Government has a support role and influences most of the initiatives indirectly.

Most of the strategic actions to optimise freight modal share in the Western Cape are focused on the road to rail shift, considering that this has the greatest potential in the short to medium term.

4.5.1.3 Strategic Actions to Improve the Market Share of Rail in the Western Cape

The following actions are proposed to improve the market share of rail in the Western Cape:

Action 3A-1	**Use a Western Cape Freight Demand Model (FDM) to Quantify freight that is currently transported by road and can be shifted to alternative modes and use the output to set modal shift targets in the province.**

To improve the market share of rail in the Western Cape, better information on the potential of the mode is required to set realistic targets for shifting certain freight from

road. Improved information on the potential of rail is valuable in developing fact-based strategies for promoting the shift of freight to the mode.

A Western Cape FDM was developed concurrently with this Freight Strategy and includes work to quantify the opportunities to shift certain freight from road to other modes, including rail. Quantifying these opportunities is an important first step in developing interventions to shift freight from road.

Work similar to that required in Action 3A-1 was part of a study conducted through the Stellenbosch University, focusing specifically on the road-to-rail shift. However, the study needs updating and expansion to include other modes, particularly coastwise shipping which can play a key role in the Western Cape. In addition, the study simply determined volumes of rail friendly freight that were moved by road on the corridors and did not assess the demand elasticity. An understanding of demand elasticity is necessary to determine the freight that will shift to alternative modes.

Targeted Outcome of Action 3A-1

The outcome of Action 3A-1 is improved ability of the Western Cape Government to develop evidenced based strategies to shift freight from road to alternative modes, including rail and such strategies could lead to an increase in the market share of rail in the province.

Action 3A-2	**Develop a monitoring tool for tracking progress towards modal shift targets in the Western Cape province.**

The Western Cape Government and Transnet have been making efforts to improve the market share of rail and to shift freight from road to other modes, even before the development of this Freight Strategy. However, the Western Cape province has not developed a structured approach to monitoring progress towards modal shift targets in the province and this makes it difficult to assess the effectiveness of initiatives to optimise freight modal spilt. Also, without ongoing monitoring of progress, corrective measures cannot be developed in time if strategic interventions are not achieving targeted modal shift objectives.

Developing a framework or tool for monitoring modal shift progress is, therefore, valuable for the Western Cape Government to make necessary changes to modal shift strategic interventions when required. The monitoring can be done on an annual basis using input from the FDM, which will also be updated annually to reflect changes in the freight transport modal split. Also, the monitoring tool could be used in trend analysis, which is useful in providing facts for use in lobbying e.g. to convince Transnet to increase investment in rail in the province or to support PPP initiatives for rail development.

Targeted Outcome of Action 3A-2

Performing Action 3A-2 will enable the Western Cape Government to monitor modal shift progress and to review the effectiveness of modal shift strategies to make adjustments to improve the chances of achieving modal shift objectives.

Action 3A-3	**Use information on the full cost, including externality costs, of different modes to develop and implement programmes to improve industry awareness of the negative impacts of road freight to encourage the adoption of rail for moving appropriate freight.**

Industry is a key stakeholder in freight in the Western Cape and has an important role in supporting the modal shift imperative. Industry is the source of demand for freight and modal choices of businesses have an impact on modal split in the Western Cape. There are opportunities to influence these modal choices by increasing awareness of the negative impacts of modes such as road. This could be achieved by providing industry with more information regarding the hidden cost of road freight externalities, which are currently not reflected in the rates paid for transporting freight by road. Improved awareness regarding the full cost of road freight could lead industry to consider the long-term sustainability of modal choices and avoid focusing on short term profits from using road, especially in moving freight that is suited to other modes such as rail.

Information on externalities could also be used to influence businesses that already have sustainability programmes to develop partnerships to promote sustainable freight delivery. Also, the full cost information, including externalities could also be used to create awareness regarding what industry should be paying for using road freight and to influence National Government and other agencies to review road subsidies to make rail more competitive.

Targeted Outcomes of Action 3A-3

Action 3A-3 will lead to wider awareness of the negative impacts of road freight to encourage industry to make modal choices that minimise these impacts and improve sustainability of freight transport in the Western Cape.

Action 3A-4	**Develop a suitable, adaptable tool and dashboard based on the outputs of the Freight Demand Model (FDM) to monitor all important metrics, including freight logistics and externality costs.**

Monitoring the key freight transport metrics such as logistics costs and externalities is important to assess the effectiveness of strategic interventions and to develop corrective measures to improve the chances of achieving freight strategic objectives.

Such monitoring is useful in developing information that is useful in developing strategies to improve modal shift.

Nationally, a Logistics Barometer compiled by the Stellenbosch University on an annual basis is used to monitor key freight metrics, including logistics cost and externalities. The City of Cape Town has developed a Transport Development Index (TDI) for monitoring transport metrics. Both tools are examples that the Western Cape Government could consider under Action 3A-4. The output of the dashboard could be used for lobbying purposes and to encourage cooperation amongst industry and WCG and national departments that perform functions that impact freight. Also, the output could be useful in disseminating information in the media to improve awareness regarding externalities and strategies to reduce them.

Targeted Outcome of Action 3A-4

The targeted outcome of Action 3A-4 is improved information on trends in key freight metrics to provide evidence to support certain strategic initiatives for modal shift in the Western Cape.

Action 3A-5	**Assess policy (e.g. user charging), incentives or regulation for promoting the shift of freight from road to alternative modes and implement suitable options to enhance modal shift in the province.**

Policy intervention, incentives and regulation could be useful in promoting the shift of certain freight from road to rail and other modes. As an example, road user charging could be valuable in ensuring that road freight rates reflect the full cost of the mode, including externality costs and this could encourage industry to shift certain freight to rail to reduce costs. Currently no policies, incentives and regulation for promoting modal shift exist in the Western Cape. In performing Action 3A-5, the Province will assess the feasibility of several options and develop those that have the greatest potential. Information regarding externalities is required to developing these options and output of Action 1A-3 could be useful in providing such information.

As discussed in the status quo review in Section 3.4.7, policies for promoting modal shift, particularly road user charging may face significant resistance and, therefore, extensive stakeholder engagement is necessary to develop policies that industry, political decision makers and the public will buy into.

Targeted Outcome of Action 3A-5

Assessing and developing appropriate policy, incentives and regulation for promoting modal shift will decrease reliance on market factors to dictate modal choices. Market factors are in certain cases not adequate because they do not always reflect the full cost of modes such as road and, therefore, policy, incentives and regulation could help in levelling the playing field across modes, encouraging the shift of freight to modes such as rail.

Action 3A-6	**Support the development of more waste-on-rail projects in the Western Cape in partnership with DEA&DP, local Municipalities, Transnet and the private sector.**

Waste-on-rail initiatives could reduce the demand for road freight transport by shifting certain waste freight to rail. DEA&DP is looking to develop more waste-on-rail projects in the Western Cape to reduce the cost of transporting solid waste. DTPW could provide support such as the development of rail and intermodal infrastructure for waste-on-rail initiatives, working in partnership with Transnet. In performing this action, DTPW will engage DEA&DP to identify planned waste-on-rail projects and to determine the feasibility of developing the projects and required support.

A challenge raised during the status quo review is the significant coordination and negotiation required among several stakeholders regarding investment, ownership and operational responsibilities for waste-on-rail facilities. A coordination structure should be developed in performing Action 3A-6.

Targeted Outcome of Action 3A-6

The primary outcome of Action 3A-6 is increased contribution of waste-on-rail projects towards reducing the demand for road freight in the Western Cape.

Action 3A-7	**Conduct a survey to determine user perceptions regarding rail and use appropriate information and awareness campaigns to change perceptions.**

User perceptions regarding rail have been negative for several years due to historical low service levels and poor reliability of the rail network. Transnet has, however, been working to improve the service levels of rail and the rail infrastructure to improve reliability. It is not clear whether the efforts being made by Transnet have changed the image of rail to industry and the public. A survey of industry participants could be used to assess perceptions regarding rail and the findings could be used to develop campaigns to educate users on the improvements that Transnet has made to the rail network. These campaigns may change user perceptions and help support the shift of freight from road to rail.

The proposed survey could be conducted in partnership with Transnet since the company will benefit from getting more information on customers perceptions regarding its service.

Targeted Outcome of Action 3A-7

Performing Action 3A-7 will provide the Western Cape Government with data on user perceptions, which is useful in developing evidence-backed responses to change perceptions regarding rail and promote its use in moving suitable freight.

4.6 Strategy for Western Cape Freight Infrastructure

Freight transport infrastructure capacity and condition have a direct impact on the efficiency and reliability of the freight transport network. In addition, the condition of infrastructure has an impact on safety and indirectly influences user preferences of certain modes. For example, part of the greater preference for road freight transport is a result of perceived poor reliability of the rail network owing to certain parts being in poor condition.

The provision of infrastructure of suitable quality is, therefore, important in the Western Cape Freight Strategy.

Several shortcomings exist in the Western Cape freight infrastructure. Strategic objectives ad actions have been proposed to address these shortcomings. The proposed strategic objectives and actions are summarised in Table 4-4.

Table 4-4: Freight Infrastructure Strategic Programme Summary

Strategic Focus Area 4 - Freight Infrastructure Strategic Programme	
Strategic Objective	
4A	Improve capacity, condition and interconnectivity of freight transport infrastructure to meet demand in a sustainable manner.
Strategic Actions	
4A-1	Develop and utilise an appropriate framework to monitor capacity and condition of freight infrastructure, with input from service providers such as Transnet, SANRAL and DTPW Road Network Management Chief Directorate.
4A-2	Use appropriate platforms (e.g. Transnet Workgroup when finalised) for ongoing engagement with Transnet to identify areas where Government support is required in the provision of adequate network capacity.
4A-3	Identify opportunities for partnerships with the private sector to provide freight infrastructure in certain areas.
Strategic Objective	
4B	Improve freight network access, including for industries and communities outside of major urban centres through the provision of appropriate infrastructure.
Strategic Actions	

Strategic Focus Area 4 - Freight Infrastructure Strategic Programme	
4B-1	Identify strategic branch lines within the WC and advocate for their prioritisation within the NDoT and Transnet strategies respectively.
4B-2	Develop partnerships with local Municipalities for provision of infrastructure required to improve access for local users.
4B-3	Identify other locations for future intermodal facilities in addition to Belcon.
4B-4	Work with Transnet to identify additional applications of intermodal technology such as bi-modal semi-trailers.

The freight infrastructure strategic objectives and actions are discussed in more detail in the sections below.

4.6.1 Western Cape Freight Infrastructure Capacity and Condition

4.6.1.1 Issues in Western Cape Freight Infrastructure Capacity and Condition

The following key issues regarding the capacity and condition of the freight transport network infrastructure were identified during the status quo review:

Issue 4A **Poor condition of certain rail sections leading to capacity constraints.**

Certain sections of the main lines were noted to be in poor condition in Transnet's Rail Development Plan of 2015. These include the Kimberley to Vereeniging and Vereeniging to Noupoort sections of the Gauteng-Cape Town Corridor (CAPCOR). Performance of these sections was substantially below the network average and the capacity severely limited. This poor condition affects the movement of freight from the Western Cape to Gauteng and vice versa. Among the causes of the shortcomings were mixed freight and passenger rail operations on the sections, vandalism and theft.

Issue 4B **Capacity constraints for certain cargo types at the Ports of Cape Town and Saldanha Bay.**

The demand for container handling at the Port of Cape Town is expected to exceed installed capacity between 2019 and 2023 (Transnet , 2016). In addition, capacity at the port of Cape Town is affected by inadequate loading equipment e.g. the installed crane density is lower than that required in certain peak periods or when it is necessary to clear backlog that is a result of weather-related stoppages.

Also, the port of Saldanha's iron ore terminal is currently operating at capacity and this poses a risk (Transnet , 2016).

Issue 4C	**Opportunity to improve condition of rural unsurfaced roads.**

Priority for road maintenance in the Western Cape is given to surfaced roads which mainly serve urban centres and provide regional linkages between population and economic centres. While this is justified by the larger proportion of traffic that uses the surfaced roads, poor condition of certain unsurfaced roads may negatively impact economic growth of certain regions. In 2015 the average Network Condition Number (NCN) of unsurfaced road in the Western Cape was 50. This is lower than the average of 64 for surfaced roads in the province (Western Cape Department of Transport and Public Works, 2017).

Issue 4D	**Capacity and speed limitations posed by the Cape gauge railways.**

The narrow Cape gauge railway lines constrain the allowable loading capacity. Restrictions on the narrow-gauge railways also limit allowable train operating speeds. Transnet operates heavy haul trains on the narrow-gauge tracks at a maximum speed of 80 km/h. Speed can be limited to as low as 50 km/hr in section where the condition of rail infrastructure is poor.

Issue 4E	**Excessive cost of road infrastructure maintenance.**

The substantial number of road freight vehicles on Western Cape roads leads to excessive road damage, which increases the cost of road maintenance and reduces the useful life of roads. In addition, the prevalence of overloading and the use of unsuitable alternative routes (not built to withstand heavy vehicles) in the road transport network increases road wear and maintenance cost. Most of the cost of road damage is not transferred to users and, therefore, adds a financial burden to the Western Cape Government. In the Western Cape, there is an ongoing trend of road maintenance budget shortfall, estimated to be 14.3% of the roads maintenance budget in the Fiscal Year (FY) 2016/17 (Western Cape Department of Transport and Public Works, 2017). The budget shortfall has increased from around 6% of the roads maintenance budget in the FY 1999/00. Also, there has been a substantial increase in the road maintenance and upgrade backlog. The backlog has increased from R 2 billion in FY 1999/00 to almost R 22 billion in FY 2016/17 (Western Cape Department of Transport and Public Works, 2017).

4.6.1.2 Strategic Objectives to Address Issues in Freight Infrastructure Capacity and Condition

The following strategic objective is proposed to address issues in infrastructure capacity and condition.

Objective 4A	**Improve capacity, condition and interconnectivity of freight transport infrastructure to meet demand in a sustainable manner.**

Objective 4A is proposed to address Issues 4A, 4B and 4C. No objectives are proposed to address issues 4D and 4E for the following reasons:

- The Cape gauge is the standard size on most railways in South Africa and in several other countries in Southern Africa. While its limitations are a concern, it is unlikely that this will change anytime soon, considering the cost and practicality of upgrading the entire South African network. In addition, the need for connectivity with other countries using the same standard in the region may put South Africa at a disadvantage if the country upgrades to a wider gauge. There are ongoing deliberations on the issue in the drafting of national rail policy e.g. in the Draft White Paper on National Rail Policy, 2017 although no conclusion has been reached yet.
- The excessive cost of road maintenance is closely linked to modal rebalancing and traffic management. A reduction in the cost of road maintenance could be achieved by reducing the number of heavy vehicles on the roads and increasing compliance with overload control measures. Objectives for improving modal balance and traffic management will, therefore, indirectly address the road maintenance cost issue.

Apart from initiatives in provincial road infrastructure, most initiatives to improve freight infrastructure in the Western Cape are implemented by stakeholders such as Transnet and SANRAL. The Western Cape Government has indirect influence on these initiatives and will use platforms such as the proposed Transnet Workgroup to coordinate with the relevant stakeholders.

4.6.1.3 Strategic Actions to Achieve Objectives in Freight Infrastructure Capacity and Condition

The following actions are proposed to improve the Western Cape's freight infrastructure capacity and condition:

Action 4A-1	**Develop and utilise an appropriate framework to monitor capacity and condition of freight infrastructure, with input from service providers such as Transnet, SANRAL and DTPW Road Network Management Chief Directorate.**

Apart from provincial roads, the Western Cape Government has no framework for ongoing monitoring of capacity of different modes to determine the areas that require interventions. As a result, initiatives to address capacity and condition of the freight network are reactionary. Ongoing monitoring of the capacity and condition of the freight network will enable the Western Cape Government to be proactive in developing interventions to address issues in freight infrastructure to enhance the efficiency of the freight transport network.

Targeted Outcome of Action 4A-1

The main outcome of Action 4A-1 is improved information regarding capacity and condition of the Western Cape freight network to improve planning of initiatives to provide adequate infrastructure.

Action 4A-2	**Use appropriate platforms (e.g. Transnet Workgroup when finalised) for ongoing engagement with Transnet to identify areas where Government support is required in the provision of adequate network capacity.**

As mentioned in Section 4.6.1.2, the Western Cape Government's has indirect involvement in most freight infrastructure initiatives and will use suitable platforms to engage stakeholders such Transnet on infrastructure issues in the province. The outcome of such engagements is ongoing coordination of freight infrastructure initiatives with relevant stakeholders. The Western Cape Government will use the engagements to identify areas where Government support, e.g. funding and policy, is required in developing certain initiatives.

Targeted Outcome of Action 4A-2

The outcome of performing Action 4A-2 is improved coordination of freight infrastructure initiatives between service providers and Government, through which industry will receive ongoing support to develop and implement infrastructure initiatives.

Action 4A-3	**Identify opportunities for partnerships with the private sector to provide freight infrastructure in certain areas.**

In certain cases, the private sector could play a key role in providing certain freight infrastructure. Entities such as Transnet can only develop infrastructure e.g. branch lines where such projects provide a certain return on investment. As a result, businesses located in areas where infrastructure projects are not viable for service providers may not get access to the freight network. These businesses have an incentive to invest in infrastructure to support their operations and the Western Cape Government could use appropriate partnerships to develop infrastructure together with the businesses.

Targeted Outcome of Action 4A-3

Developing partnerships reduces reliance on profit-driven service providers to develop infrastructure. Partnerships present a feasible alternative to developing infrastructure to improve network capacity and access to the freight network in the Western Cape.

4.6.2 Western Cape Freight Network Access

4.6.2.1 Issues in Western Cape Freight Network Access

Access to the freight network for all areas that have freight transport needs is important in promoting inclusive economic development. Also, improved access to certain modes such as rail is important in optimising the freight transport modal split in the Western Cape. The following issue regarding access to the freight network was identified in the status quo review.

Issue 4F	**Historical poor access to the rail network because of underinvestment in branch lines, loading stations and intermodal facilities.**

An assessment of the accessibility of the rail network conducted during the development of National Freight Logistics Strategy (NFLS) showed a significant reduction in the number of usable rail loading points between 1980 and 2015. Poor access to the rail network precludes certain potential customers from transporting suitable freight by rail. In most cases such potential users have no option but to resort to road transport even for rail friendly freight and this worsens modal imbalance in the Western Cape.

4.6.2.2 Strategic Objectives to Address Issues in Western Cape Freight Network Access

The following objective is proposed to address issues in freight network access in the Western Cape:

Objective 4B	**Improve freight network access, including for industries and communities outside of major urban centres through the provision of appropriate infrastructure.**

As mentioned in Section 4.6.2.1, improving access to the freight transport network is necessary to achieve inclusive economic growth, a key tenet of sustainable development.

4.6.2.2.1 Strategic Actions to Achieve Objectives in Western Cape Freight Network Access

The following strategic actions are proposed to achieve objectives in freight network access for the Western Cape.

Action 4B-1	**Identify strategic branch lines within the WC and advocate for their prioritisation within the DoT and Transnet strategies.**

Transnet is implementing a branch line strategy and several branch lines have already been rehabilitated in the Western Cape. The list of lines that have been rehabilitated is presented in Table 3-5. Further work under the branch line, including the

identification of more lines that could be rehabilitated under the strategy will improve access to the rail network in the Western Cape. In addition, other interventions proposed in this Strategy, such as waste-on-rail initiatives, require provision of branch lines in certain cases and will, therefore, depend on successful implementation of the Transnet branch line strategy in the Western Cape.

Also, DoT has developed a national branch line strategy. Alignment between this strategy and Transnet's Branch Line Strategy must be ensured.

Targeted Outcome of Action 4B-1

Supporting Transnet and DoT's branch line strategies and aligning these strategies with provincial branch line priorities will improve access to the rail network and this is important in promoting inclusive economic growth in the province.

Action 4B-2	**Develop partnerships with local Municipalities for provision of infrastructure required to improve access for local users.**

Local Government could play a key role in addressing local freight infrastructure needs and the Provincial Government can use partnerships to provide support to local Municipalities. The local sphere of Government has a deeper understanding of local freight infrastructure needs because of closer ties with businesses in its jurisdiction. Such knowledge is beneficial in improving access to the freight network through targeting the areas with greatest need to maximise the return on investment in infrastructure. Through partnerships, Local Government could take a lead in addressing certain infrastructure needs, with the Provincial Government providing support where required. In performing Action 4B-2, the Western Cape Government could use appropriate agreements e.g. Memoranda of Understanding (MOU) to develop infrastructure projects jointly with Local Government.

Targeted Outcome of Action 4B-2

Developing partnerships with local government will reduce the Provincial Government's burden of providing freight infrastructure. In addition, local participation encourages buy into projects and could result in transfer of skills which Local Government will use to address infrastructure challenges in the long term to improve connectivity of Municipalities.

Action 4B-3	**Identify other locations for future intermodal facilities.**

Intermodal facilities such as Belcon are useful in improving access and connectivity of the freight transport network. As the Western Cape province's economy grows, more of these facilities will be required to improve access to the freight network. It is, therefore, necessary to identify potential locations of these facilities to start planning the development of additional facilities. In the status quo review it was highlighted that Transnet had done preliminary work to identify locations for future intermodal

facilities. This work needs to be updated. The Western Cape Government should engage Transnet, provide input in the update and use the information for infrastructure planning in the province.

Targeted Outcome of Action 4B-3

The main outcome of Action 4B-3 is improved ability of the Western Cape Government to plan the development of additional intermodal facilities. Information on the location of future facilities is useful to Government in planning to provide services to the sites or to reserve land for the intermodal facilities.

Action 4B-4	**Work with Transnet to identify additional applications of intermodal technology such as bi-modal semi-trailers.**

Transnet is conducting trials of bi-modal semi-trailers. These are container semi-trailer chassis with normal road wheels and a rail bogie (rail vehicle undercarriage where wheels are mounted) for use on rail tracks. The first application of the technology will be in moving containers from the Belcon facility to the port of Cape Town. The technology has several other applications, and these are discussed in Section 3.7.3.2. Wider application of the technology presents opportunities to increase access to the rail network for certain areas without the need to invest in expensive fixed intermodal infrastructure. Also, the technology is a suitable solution for locations where branch lines or loading stations are not practical due to low freight transport density that does not justify investing in fixed infrastructure.

Targeted Outcome of Action 4B-4

The main outcome of wider application of intermodal technology such as bi-modal semi-trailers is increased access to the rail network without the need to invest significant capital. This reduces hurdles in providing access to the rail network in the province, improving Transnet and the Western Cape Government's ability to increase access to the rail network.

4.7 Strategy for Western Cape Freight Traffic Management

Effective traffic management and enforcement plays an important role in ensuring that the freight system in the Western Cape is safe, reliable and efficient. Traffic management authorities enforce the rules of the road and act as a deterrent to non-compliant road users. Examples of non-compliance on the part of freight road users include driver fatigue, the use of unroadworthy vehicles, unlicensed drivers, speeding, drunk driving and overloading. Noncompliance with freight traffic regulation leads to:

- An unacceptably high number of road traffic crashes involving heavy goods vehicles;
- Accelerated road infrastructure deterioration which is worsened by the prevalence of overloading; and
- Excessive noise and air pollution from unroadworthy heavy vehicles.

The freight traffic management effort for South Africa and the Western Cape has increased because of the growth in road freight transport over the last three decades. This growth has led to many heavy goods vehicles on the road network and requires greater traffic management or enforcement effort to ensure freight vehicles comply with the rules of the road. In the Western Cape, the capacity of the traffic management authorities to keep up with road traffic growth has been greatly impacted by the existing modal imbalance. Poor traffic management also distorts the market in that non-compliant operators have higher externality costs and lower internal costs. Because of the unfair advantage that non-compliant operators enjoy, compliant operators won't compete on certain important routes, exacerbating the prevalence of traffic law violations because of the dominance of the non-compliant operators.

The status quo review of the Western Cape freight landscape revealed several traffic management challenges. Strategic objectives and actions were developed to address these challenges. The strategic objectives and actions to address issues in Western Cape traffic management are summarised in Table 4-5.

Table 4-5: Traffic Management Strategic Programme Summary

Strategic Focus Area 5 – Traffic Management Strategic Programme	
Strategic Objective	
5A	Reduce the number of freight-related, heavy vehicle crashes in the Western Cape.
Strategic Actions	
5A-1	Assess the feasibility of establishing a law enforcement network of one-stop measurement sites to measure overloading, verify

Strategic Focus Area 5 – Traffic Management Strategic Programme	
	regulatory compliance around permits and licences, check driver wellness and inspect vehicle roadworthiness.
5A-2	Identify key driver skills needs in consultation with road freight sector and develop programmes to improve driver competencies in partnership with the private sector and the Transport Education Training Authority (TETA).
5A-3	Support safety awareness campaigns (e.g. those by Arrive Alive and Safely Home) and incorporate a freight focus, including freight risks, issues and statistics where appropriate.
5A-4	Develop programmes to improve driver wellness and working conditions, including the use of appropriate technology (e.g. drowsiness detection) to improve driver performance, working in partnership with the road freight sector.
5A-5	Conduct a survey to determine industry impediments to adopting RTMS and use the results to identify ways to promote the programme to improve voluntary compliance.
5A-6	Assess the feasibility of developing more truck stops to reduce incidents of dangerous heavy vehicle parking and to promote driver wellness.
5A-7	Use traffic enforcement data generated in the DTPW and in programmes such as Arrive Alive to identify heavy vehicle traffic congestion and crash hotspots to develop appropriate interventions to mitigate their impact.
5A-8	Review Departmental process for monitoring freight traffic enforcement capacity and improve capacity where appropriate.
Strategic Objective	
5B	Reduce the proportion of overloaded vehicles and the average overload size in the Western Cape.
Strategic Actions	
5B-1	Expand efforts to monitor weighbridge avoidance routes including provision of resources for more roadside screening along known weighbridge avoidance routes.

Strategic Focus Area 5 – Traffic Management Strategic Programme	
5B-2	Assess the feasibility of developing more Weigh-in-Motion (WIM) sites to improve compliance and develop additional sites if feasible.
5B-3	Determine the resources required to increase weighbridge operating hours for weighbridges currently operating for less than 24 hours and provide such resources where feasible.
5B-4	Review the Western Cape penalty structure for overloading to assess opportunities to enhance its effectiveness as a deterrent.
5B-5	Engage the road freight sector to promote the adoption of technologies such as on-board weighing.
5B-6	Review the overload control legal framework to identify ways of improving its effectiveness in ensuring successful prosecution of offenders.
5B-7	Develop a database of the main road freight offenders which is shared with other traffic enforcement functions.
5B-8	Review the current 5% allowable overload limit to reduce the practice of deliberate overloading within this limit.
5B-9	Assess the potential incentive options to promote voluntary overload control compliance and implement the options that are feasible.
5B-10	Assess the feasibility of a 'Chain-of-responsibility' approach that requires consignor, consignees, hauler and drivers to be held liable for overloading and coordinate this with a similar proposed amendment to the National Road Traffic Act (No. 93 of 1996) (NRTA).
Strategic Objective	
5C	Reduce the negative impact of general freight, abnormal load and dangerous goods movement on traffic flow and infrastructure.
Strategic Actions	

Strategic Focus Area 5 – Traffic Management Strategic Programme	
5C-1	Finalise the development of a provincial Abnormal Load Route framework for the Western Cape and identify key routes that require interventions such as infrastructure enhancement.
5C-2	Engage DEA&DP and provide support in the development of a provincial Dangerous Goods Route Framework.
5C-3	Improve coordination of abnormal load and dangerous goods movement with local Municipalities through improved engagements and a review of existing abnormal load coordination institutional arrangements and bylaws.
5C-4	Assess the use of mobile applications or other technology for coordinating traffic around ports (e.g. scheduling the arrival of vehicles) to mitigate congestion on feeder routes.
5C-5	Engage and support Transnet to complete a study to assess the impact of traffic to and from the Belcon intermodal facility.
5C-6	Review and improve the application process for abnormal load permits to improve compliance.
5C-7	Review the application fees for abnormal loads, and other ways to improve cost recovery.
5C-8	Conduct a study to develop an informed position on the application of off-peak freight movement regulations and alternative approaches to congestion management (e.g. freight congestion charging) in the Western Cape.

The traffic management strategic objectives and actions are discussed in more detail in the sections below.

4.7.1 Road Freight Traffic Safety

Road freight traffic has a direct impact on other services such as public transport. Improving safety of road freight traffic is, therefore, critical in minimising the impact of freight movement on the public.

4.7.1.1 Issues in Road Freight Traffic Safety

The key road freight safety issue identified during the status quo review is:

Issue 5A **A high number of freight-related, heavy vehicle crashes.**

South Africa and the Western Cape record a high number of crashes that involve heavy vehicles. A study conducted in 2007 showed that South Africa recorded more than twelve (12) heavy vehicle related fatalities per 100 million kilometres (Moore, 2007). This was much higher than the average of four (4) fatalities per 100 million kilometres for the nine (9) countries in the study. Several interrelated sub-issues contribute to the high number of heavy vehicle crashes. These sub-issues include:

- Inadequate law enforcement capacity to meet the traffic management demand imposed by road freight dominance. Low capacity makes law enforcement evasion easier for traffic offenders;
- Prevalence of unroadworthy vehicles on roads;
- Poor driver behaviour, partly because of inadequate training, corruption, and illegal licencing. Such behaviour includes speeding, drunk driving and dangerous overtaking;
- Lack of programmes to monitor and promote driver wellness;
- The lack of traffic management measures such as restriction of movement of freight to off-peak periods. Off-peak freight movement was mentioned in the Provincial Land Transport Framework (PLTF, (2016/17 – 2020/21)) which states that the approach is likely to increase transport costs and is therefore not worth pursuing. Case studies for similar initiatives developed for the status quo review showed that several factors need to be investigated before a conclusion on the feasibility of the approach is reached. In addition, there could be value in considering localised application of the restrictions in certain areas, such as those close to ports.

4.7.1.2 Strategic Objectives to Address Road Freight Traffic Safety Issues

The following strategic objective is proposed to address the road freight safety issue above:

Objective 5A	**Reduce the number of freight-related, heavy vehicle crashes in the Western Cape.**

Road freight crashes have a cost on society because of injuries, fatalities and damage to transported goods and infrastructure. In most cases, heavy vehicle related crashes are more severe and affect other transport network users such as commuters and pedestrians. Reducing these crashes is important in achieving sustainable freight transport delivery in the Western Cape. Several steps could be taken to improve the safety of the road freight sector and these are discussed in the strategic actions below.

4.7.1.3 Strategic Actions to Achieve Objectives in Road Traffic Safety

The following strategic actions are proposed to reduce the number of road freight, heavy vehicle related crashes in the Western Cape:

Action 5A-1	**Assess the feasibility of establishing a law enforcement network of one-stop measurement sites to measure overloading, verify regulatory compliance around permits and licences, check driver wellness and inspect vehicle roadworthiness.**

The PLTF (2016/17 – 2020/21) includes a suggestion for the Western Cape Government to deploy a law enforcement network of "one-stop" measurement sites to measure overloading, verify regulatory compliance around permits and licences, check driver wellness and inspect vehicle roadworthiness. While this is an objective in the PLTF Freight Strategy, the feasibility of the approach is not certain, and it is necessary to make an assessment to determine if the approach is a practical and affordable solution in the Western Cape. In performing Action 5A-1, the Western Cape Government will conduct a study of one stop measurement sites and will engage the road freight industry and other stakeholders to provide input.

Targeted Outcome of Action 5A-1

The targeted outcome of Action 5A-1 is an informed position regarding the feasibility of one stop sites in the Western Cape to reduce the risk of investing in the facilities, if doing so is impractical costly not financially viable.

Action 5A-2	**Identify key driver skills needs in consultation with road freight sector and develop programmes to improve driver competencies in partnership with the private sector and the Transport Education Training Authority (TETA).**

Human factors are the main cause of road traffic crashes in South Africa. A study of historical road traffic crash data conducted by the Department of Transport showed that 60% to 90% of road crashed were a result of human factors e.g. reckless driving (Botha, 2005). Therefore, improving driver skills could have a positive impact on road traffic safety. The Western Cape Government could work with the road freight sector to identify critical driver skills and provide support in developing such skills in the province. Government could use appropriate forums such as the proposed PTMF to engage the road freight sector and other stakeholders to develop a programme for supporting driver skills development.

Targeted Outcome of Action 5A-2

Performing Action 5A-2 will provide the Western Cape Government with information on driver skills needs in the province. This information is useful in developing programmes to improve driver competencies, to improve road traffic safety.

Action 5A-3	**Support safety awareness campaigns (e.g. those by Arrive Alive and Safely Home) and incorporate a freight focus, including freight risks, issues and statistics where appropriate.**

Several road traffic safety programmes exist in the Western Cape and most do not have a clear freight traffic component. Most programmes were developed with a public transport focus. The Western Cape Government could use the existing programmes as a base and add appropriate freight components to address road freight safety issues.

Targeted Outcome of Action 5A-3

Action 5A-3 will lead to improved awareness regarding safety in the road freight sector. Taking advantage of existing programmes reduces the effort and cost to improve awareness regarding safety in the road freight sector.

Action 5A-4	**Develop programmes to improve driver wellness and working conditions, including the use of appropriate technology (e.g. drowsiness detection) to improve driver performance, working in partnership with the road freight sector.**

As discussed under Action 5A-2, human factors are the major cause of road traffic crashes and improving driver wellness is one way of mitigating the road traffic safety risk posed by human factors. The Western Cape Government currently has no formal programme to support the road freight industry to improve driver wellness. Developing such a programme could enhance efforts by the road freight sector to improve driver wellness and improve road freight safety. This could include programmes to facilitate ongoing assessment of driver health, improved information on wellness among drivers or the use of technology to monitor wellness of drivers. The Western Cape Government could use appropriate forums to engage the road freight industry to identify driver wellness support needs and use the information to develop programmes to support the sector.

Targeted Outcome of Action 5A-4

The targeted outcome of Action 5A-4 is improved driver wellness in the Western Cape which leads to a reduction in road traffic crashes that result from driver wellness issues.

Action 5A-5	**Conduct a survey to determine industry impediments to adopting RTMS and use the results to identify ways to promote the programme to improve voluntary compliance.**

Wider adoption of RTMS in the Western Cape could improve road freight transport safety. The Western Cape Government does not have programmes to encourage

industry to adopt RTMS and has no information on the extent of RTMS adoption and the key drivers for adoption of the programme in the province.

The CSIR has conducted a study on the adoption of RTMS in South Africa and identified the challenges that the road freight sector faces in adopting RTMS. This study is discussed in Section 3.6.3. A similar study, providing more information on RTMS adoption in the Western Cape is useful in developing strategies to improve the adoption of the programme in the province's road freight transport sector.

Targeted Outcome of Action 5A-5

Performing Action 5A-5 will provide the Western Cape Government with data that is useful in developing interventions to encourage wider adoption of RTMS to improve freight transport outcomes, including road freight transport safety in the province.

Action 5A-6	**Assess the feasibility of developing more truck stops to reduce incidents of dangerous heavy vehicle parking and to promote driver wellness.**

Certain crashes involving heavy vehicles are a result of dangerous, roadside parking of trucks. The road freight sector has raised concerns regarding the lack of suitable parking facilities for use when drivers need to rest. Improving the availability of truck stops in the Western Cape is one of the recommendations in the Western Cape Freight Transport and Logistics Plan developed by the CSIR in 2009. Besides reducing the risk posed by dangerously parked heavy vehicles, truck stops promote driver wellness by providing resting facilities and other amenities such as roadside wellness clinics.

In performing Action 5A-6, the Western Cape Government could work with private sector companies. Certain private sector companies such as the Kempston Group already provide truck stop facilities to the road freight industry and could partner the Western Cape Government to develop more facilities in the province.

Targeted Outcome of Action 5A-6

The targeted outcome of Action 5A-6 is a reduction in the number of crashes that are a result of dangerous, roadside parking. Developing more truck stop sites will also lead to improved driver wellness in support of Action 5A-4 to reduce crashes that are related to driver wellness issues such as fatigue, considering that drivers will have improved access to resting and health monitoring facilities.

Action 5A-7	**Use traffic enforcement data generated in the DTPW and in programmes such as Arrive Alive to identify heavy vehicle traffic congestion and crash hotspots to develop appropriate interventions to mitigate their impact.**

Certain Western Cape traffic statistics include information on the locations of road crashes and could be used to develop insights on locations where crashes occur most frequently. Information on such locations is useful in developing interventions to improve safety of road users in these sections of the road. These interventions could include improved designs of the sections and provision of appropriate road markings and signs to warn drivers and other road users of risks. This action must be coordinated with any related work that DTPW Roads may already be doing to identify and address traffic crash and congestion hotspots.

Targeted Outcome of Action 5A-7

Performing Action 5A-7 reduces or eliminates risk factors responsible for traffic crashes in parts of the Western Cape road network. Over time this results in a reduction in the number of crashes in the province.

Action 5A-8	**Review Departmental process for monitoring freight traffic enforcement capacity and improve capacity where appropriate.**

The demand for freight traffic enforcement in the Western Cape has increased because of the existing modal imbalance. Growth in road freight has caused an increase in law enforcement capacity needs in the province. There is need for ongoing monitoring of enforcement capacity to identify needs for enhancement to keep up with changes in demand. This improves the Western Cape Government's ability to plan capacity and provides information to justify requests to increase capacity.

Targeted Outcomes of Action 5A-8

Matching supply and demand for law enforcement capacity in the Western Cape improves the effectiveness of enforcement initiatives. Over time this could lead to a reduction in traffic incidents in the province.

4.7.2 Western Cape Road Freight Overload Control

Overloading of road freight vehicles results in excessive road deterioration, which increases the cost of road maintenance. In addition, overloaded vehicles are a safety risk because they are difficult to control and have greater likelihood of getting defects such as brake failure. As a result, overload control is a crucial component of road freight traffic management.

4.7.2.1 Issues in Western Cape Road Freight Overload Control

The following issue in road freight overload control was identified in the status quo review:

Issue 5B	**Prevalence of overloading on the road network.**

Over the past few years the Western Cape has recorded a significant decrease in the proportion of overloaded vehicles and the average size of overload. The proportion of overloaded vehicles as measured at weighbridges decreased from more than 16% in 2008/9 to 12% in 2015/16 (Western Cape Department of Transport and Public Works, 2017). According to the Council for Scientific and Industrial Research (CSIR), there was a decrease in the average overloading per vehicle in the Western Cape, from 2,700 kg in 1995 to just over 500 kg in 2009. Considering the negative impacts of overloaded vehicles on roads, there is a need to further reduce the proportion of overloaded vehicles and the average size of overload. Also, there are concerns that weighbridge avoidance is a frequent occurrence and leads to damage of secondary roads that are used to avoid weighbridges. The secondary roads are not designed to withstand loads from certain heavy vehicles.

Several sub-issues contribute to the overload control challenges including:

- A lack of capacity to extend the operating hours at certain weighbridges. Several weighbridges do not operate around the clock;
- A weak regulatory framework for overload control, limiting the chances of successful prosecution in certain cases; and
- Penalties that are not strong deterrents to offenders.

In addition, there are too many vehicles that are overloaded within the 5% allowable overload limit, indicating that truck operators may be deliberately overloading within this limit (Western Cape Department of Transport and Public Works, 2017).

4.7.2.2 Strategic Objectives to Address Issues in Western Cape Road Freight Overload Control

Considering the prevalence of overloading in the Western Cape road freight industry, the following strategic objective is proposed:

Objective 5B	**Reduce the proportion of overloaded vehicles and the average size of overload in the Western Cape.**

Achieving Objective 5B will lead to a reduction in the cost of road infrastructure maintenance. This cost has increased over the past few years and there is a backlog in road infrastructure maintenance in the Western Cape as discussed in Section 3.5.2.

4.7.2.3 Strategic Actions to Achieve Objectives in Western Cape Road Freight Overload Control

The following strategic actions are proposed to improve road freight overload control in the Western Cape:

Action 5B-1	**Expand efforts to monitor weighbridge avoidance routes including provision of resources for more roadside screening along known weighbridge avoidance routes.**

In 2015 the Western Cape Government began a roadside screening programme along known weighbridge avoidance routes to improve compliance with overload control. Expanding the programme to more locations in the Western Cape could lead to improved compliance with overload control by increasing the certainty of offenders getting intercepted. Also, the Western Cape Government could partner with local Municipalities to conduct roadside screening in their jurisdictions to reduce the burden on provincial government. The Western Cape Government could provide local Municipalities with resources such as portable weigh-in-motion pads/mats that are used in roadside screening. Local authorities may find such partnerships valuable, considering that weighbridge avoidance has a major impact on local roads, which are not designed to carry certain loads and suffer considerable damage when used by heavy vehicles avoiding weighbridges.

Targeted Outcome of Action 5B-1

The main outcome of Action 5B-1 is improved compliance with overload control. Increasing certainty of getting apprehended is a strong deterrent against overloading and the use of weighbridge avoidance routes.

Action 5B-2	**Assess the feasibility of developing more Weigh-in-Motion (WIM) sites to improve compliance and develop additional sites if feasible.**

In the Western Cape, WIM technology is currently used at the Beaufort West weighbridge and there are plans to install WIM technology at the soon to be built Gouda weighbridge. Weigh in Motion (WIM) systems measure the dynamic axle weight of moving vehicles to estimate the corresponding static axle mass and have the following benefits:

- A reduction in human capacity requirements and cost of weighbridge operations. WIM allows automatic screening of overloaded vehicles, making it unnecessary to weigh every heavy vehicle that goes past an overload control station;
- A reduction in time spent at overload control facilities. Only overloaded vehicles are stopped after screening. This saves time for operators of compliant vehicles.

Developing more WIM locations in the Western Cape could improve compliance with overload control and over time reduce the cost of overload control in the province. The Western Cape Government should consider assessing the feasibility of developing more WIM locations, particularly on the corridors.

Also, it was mentioned during stakeholder consultation that DoT is conducting work on the use of WIM in South Africa and it is important for Action 5B-2 to align or be coordinated with this work.

Targeted Outcome of Action 5B-2

Developing more WIM motions will lower the cost of overload control and in the long term improve compliance with overload control in the Western Cape.

Action 5B-3	**Determine the resources required to increase weighbridge operating hours for weighbridges currently operating for less than 24 hours and provide such resources where feasible.**

More than half of the weighbridges in the Western Cape do not operate around the clock and there are concerns that overloaded trucks drive past these weighbridges outside working hours. Provision of more overload control resources, taking the cost and benefit of doing so into consideration, could improve compliance with overload control in the province.

Targeted Outcome of Action 5B-3

Provision of resources for around the clock coverage will increase compliance with overload control in the Western Cape, through decreasing the likelihood of offenders going unnoticed when they drive past weighbridges outside working hours.

Action 5B-4	**Review the Western Cape penalty structure for overloading to assess opportunities to enhance its effectiveness as a deterrent.**

There are concerns that the penalty structure for overload control in South Africa and the Western Cape is not a strong deterrent against overloading. In certain cases, the benefits of overloading to truck operators outweigh the cost of fines issued for non-compliance with overload control. A review of the penalty structure to determine the possibility of increasing fines is worth considering in improving compliance with overload control.

Targeted Outcome of Action 5B-4

The main outcome of performing Action 5B-4 is an improvement in compliance with overload control due to a penalty structure that is a strong deterrent against overloading.

Action 5B-5	**Engage the road freight sector to promote the adoption of technologies such as on-board weighing.**

On-board weighing equipment is useful in preventing overloading. Unlike weighbridges, which are fixed, on-board weighing equipment can be used anywhere and therefore provides flexibility to freight vehicle operators. The use of on-board weighing technology could be incorporated in voluntary compliance programmes such as RTMS. In performing this action, the Western Cape Government will use appropriate platforms to consult the road freight sector on the possibility of wider adoption of technology to improve compliance with overload control.

Targeted Outcome of Action 5B-5

Adoption of technologies such as on-board weighing equipment will increase compliance with overload control and reduce the negative impacts of overloading in the Western Cape.

Action 5B-6	**Review the overload control legal framework to identify ways of improving its effectiveness in ensuring successful prosecution of offenders.**

A legal framework that increases the certainty of prosecution for non-compliance is a key requirement for an effective overload control system. Due to current concerns regarding gaps in the Western Cape overload control legal framework, a review of the framework is necessary to improve the effectiveness of overload control in the province.

Targeted Outcome of Action 5B-6

A legal framework that has no gaps will be a stronger deterrent against overloading and this will increase compliance with overload control in the Western Cape.

Action 5B-7	**Develop a database of the main road freight offenders which is shared with other traffic enforcement functions.**

Better information regarding overload control offenders is valuable in improving compliance. Information on the main offenders could help in targeting certain offenders and in identifying patterns that could be useful in developing strategies to improve compliance.

Targeted Outcome of Action 5B-7

The target outcome of Action 5B-7 is improved information sharing regarding overload control offenders, which helps in coordinating enforcement across traffic enforcement functions in the Western Cape.

Action 5B-8	**Review the current 5% allowable overload limit to reduce the practice of deliberate overloading within this limit.**

The RAMP (2017/18 to 2026/27) raises a concern regarding the prevalence of overloading within the 5% overload limit. Over the years there has been a steady increase in the proportion of vehicles overloaded within the 5% limit, indicating that truck operators may be deliberately overloading within this limit given that no fines are issued for such overloading. An increase in the proportion of vehicles overloaded within the 5% limit has negative impacts on road infrastructure and, therefore, requires attention. The Western Cape Government should consider assessing the impact of the increase in overloading within the 5% overload limit, with a view to lower the allowable overload limit. Alternatively, Government could use data to identify operators who frequently overload within this limit as such operators are the ones who likely engage in deliberate overloading.

Targeted Outcome of Action 5B-8

The main outcome of Action 5B-8 is a reduction in the prevalence of deliberate overloading within the 5% limit, which will reduce the impact of such overloading on road infrastructure.

Action 5B-9	**Assess the potential incentive options to promote voluntary overload control compliance and implement the options that are feasible.**

Currently, the Western Cape relies on punitive measures such as fines and prosecution to enforce compliance with overload control in the province. While punitive measures are useful deterrents, they require significant enforcement effort, which requires many resources and is, therefore, expensive. Using incentives to promote voluntary compliance has benefits such as a reduction in the enforcement effort and overload control cost to Government. Examples of incentives include discounts on licence fees, toll fees and insurance premiums for operators with good overload control records. These incentives could be implemented under RTMS, where possible.

In developing Action 5B-9, the Western Cape Government will work with the road freight industry to assess practical incentives that the sector will find practical and valuable.

Targeted Outcome of Action 5B-9

The primary outcome of Action 5B-9 is increased overload control compliance in the road freight sector through voluntary compliance. This has benefits for both trucking companies and government through reduced costs of compliance and enforcement.

Action 5B-10	**Assess the feasibility of a 'Chain-of-responsibility' approach that requires consignor, consignees, hauler and drivers to be held liable for overloading and coordinate this with a similar proposed amendment to the National Road Traffic Act (No. 93 of 1996) (NRTA).**

The 'Chain of Responsibility' approach has been successfully applied to the road freight sector in Australia and has since been extended to other sectors such as public transport in that country. The intervention originates from a realisation that driver behaviour is, in some cases, a result of the influence of other parties in the supply chain, who are generally not held accountable for negative impacts of bad driver behaviour. Holding all parties in the supply chain of certain goods accountable for issues such as overloading prevents certain parties e.g. receiving companies from making unreasonable demands on transport operators and drivers. These demands sometimes force transporters to take risks that are against traffic laws.

In performing Action 5B-10, the Western Cape Government will assess the practicality, legal and financial implications of implementing the 'Chain-of-responsibility' approach and where possible or necessary coordinate this with similar work being done at national level.

Targeted Outcome of Action 5B-10

The main outcome of Action 5B-10 is an informed position on the feasibility of a Chain-of-responsibility' approach in the Western Cape, which will be the foundation for implementing the approach. Also, findings of the feasibility study are useful input that the Western Cape Government can provide to National Government in the proposed amendments to the NRTA to make provision for adoption of a similar approach in South Africa.

4.7.3 Western Cape Abnormal Loads, Dangerous Goods and General Freight Movement

Apart from general freight transported in the Western Cape, abnormal loads and dangerous goods are transported on several occasions. Abnormal loads are indivisible (for practical purposes) objects that, due to their dimensions and/or mass, cannot be transported on a vehicle or vehicles without exceeding the limitations of the dimensions or mass as described in the National Road Traffic Regulations, 2000. Hazardous cargo includes products that are explosive, flammable, corrosive, noxious, poisonous, radioactive and irritative, biomedical material and commodities that emit poisonous vapour, amongst others. These products must be transported along designated routes to reduce the risk that they pose to the public. The status quo review of the Western Cape freight transport landscape revealed shortcomings that currently exist in the movement of abnormal loads, dangerous goods and general freight in the province and these are discussed below.

4.7.3.1 Issues in Abnormal Loads, Dangerous Goods and General Freight Movement

The key issue in abnormal loads movement in the Western Cape is:

Issue 5C	**Negative impact (e.g. road infrastructure damage) from the movement of abnormal loads, dangerous goods and general freight.**

Abnormal loads have a major negative impact on infrastructure and traffic. Transport infrastructure, including road infrastructure is not designed to handle abnormal loads and, therefore, experiences greater damage when abnormal loads are applied. In addition, the movement of abnormal loads interferes with the normal flow of traffic. Therefore, appropriate measures are essential to mitigate the negative impacts of abnormal load movement. Currently shortcomings exist in the management of abnormal loads in the Western Cape. These include:

- **Incidents of illegal abnormal load movement**;
- **Challenges in coordination of abnormal load management between DTPW and local Municipalities:** DTPW has the primarily responsibility of approving the movement of abnormal loads but must coordinate with local authorities who also provide assistance, such as the escort of the loads. Also, coordination is impacted by the lack of a formal database to facilitate information sharing for the abnormal load application process.
- **Absence of a route framework for abnormal loads**: A route framework is necessary to plan the movement of abnormal loads to minimise their negative impacts. Also, a route framework is useful in identifying infrastructure that needs improvement (e.g. increased height and width clearances) to accommodate abnormal loads. In addition, the identified routes could require protection from development to maintain space for abnormal loads.
- **Abnormal load processing fees that do not adequately cover the associated costs:** There are concerns that fees are too low to reflect the cost of externalities of abnormal load movement. In certain cases, errors in classifying abnormal loads lead to inadequate cost recovery.

Also, shortcomings exist in the management of dangerous goods and these result in negative impacts from the movement of these goods. Factors that are partly responsible for these shortcomings include:

- **The lack of a dangerous goods route framework in the Western Cape:** A dangerous goods route framework is essential to restrict the movement of dangerous goods to certain routes. Restricting the movement of dangerous goods to identified routes improves Government's ability to manage or control such movement e.g. development along the routes could be avoided to minimise the risk posed by the movement of dangerous goods on communities.
- **Complexities of coordinating the movement of dangerous goods among Local Municipalities in the province**: In certain cases, bylaws for the movement of dangerous goods in Municipalities require transporters of such goods to meet

conditions that differ from one Municipality to another. The inconsistencies in by-laws make it difficult to develop a coherent approach to managing dangerous goods, especially when such movement is across several local Municipalities.

4.7.3.2 Strategic Objectives to Issues in Abnormal Loads, Dangerous Goods and General Freight Movement

The following objective is proposed to address the negative impacts of freight movement:

Objective 5C	**Reduce the negative impact of general freight, abnormal load and dangerous goods movement on traffic flow and infrastructure.**

Reducing the negative impacts of freight movement is a key requirement in promoting sustainable freight delivery in the Western Cape.

4.7.3.3 Strategic Actions to Achieve Objectives to Issues in Abnormal Loads, Dangerous Goods and General Freight Movement

The following actions are proposed to reduce the negative impacts of general freight, abnormal load and dangerous goods movement in the Western Cape.

Action 5C-1	**Finalise the development of a provincial Abnormal Load Route framework for the Western Cape and identify key routes that require interventions such as infrastructure enhancement.**

The DTPW is developing an Abnormal Load Route Framework for the Western Cape for use in planning the movement of abnormal loads and in identifying routes that require infrastructure suitable for abnormal loads or protection from future development to reserve space for abnormal load movement. Finalising the route framework is essential in improving the management of abnormal loads in the province. Also, the DTPW should engage departments such as DEA&DP to provide input into the route framework, which has an impact on issues such as land use and spatial planning in the province.

Targeted Outcome of Action 5C-1

The targeted outcome of completing Action 5C-1 is a reduction in the negative impacts of abnormal loads on infrastructure and traffic in the long term, because of improved management of such movement.

Action 5C-2	**Engage DEA&DP and provide support in the development of a provincial Dangerous Goods Route Framework.**

The NLTA requires freight strategies to include plans for the movement of dangerous substances. In the Western Cape, work to develop a Dangerous Goods Route

Framework has been initiated by DEA&DP and DTPW should support this work to fulfil the NLTA requirements and improve the management of the movement of dangerous goods in the province. DTPW could use appropriate platforms to engage DEA&DP to determine the support required and coordinate the development of the Dangerous Goods Route Framework.

Targeted Outcome of Action 5C-2

The targeted outcome of Action 5C-2 is a reduction the negative impacts of dangerous goods movement in the long term because of improved management of such movement on the Western Cape.

Action 5C-3	**Improve coordination of abnormal load and dangerous goods movement with local Municipalities through improved engagements and a review of existing abnormal load coordination institutional arrangements and bylaws.**

The movement of abnormal loads in the Western Cape is jointly managed by the DTPW and local Municipalities. DTPW is responsible for managing the abnormal loads application process and local Municipalities provide services such as escort vehicles when the loads pass through their jurisdictions. Concerns have been raised regarding poor coordination of the movement between DTPW and local Municipalities and suggestions for a standalone institution that manages the movement have been made although the feasibility of such an approach has not yet been established. In performing Action 5C-3, the Western Cape Government will engage local Municipalities to develop an appropriate coordination structure for abnormal load movement.

Improving the coordination of dangerous goods movement could involve reviewing existing bylaws for local Municipalities to ensure consistency of abnormal and dangerous goods movement regulations in the province.

Targeted Outcome of Action 5C-3

The targeted outcome of action 5C-3 is better coordination of abnormal loads and dangerous goods movement to improve management of such movement in the Western Cape. Improved coordination enhances compliance with legislation for abnormal load and dangerous goods movement in the province. This helps to mitigate the negative impacts of abnormal load and dangerous goods movement and to reduce incidents of illegal transport of these classes of freight in the province.

Action 5C-4	**Assess the use of mobile applications or other technology for coordinating traffic around ports (e.g. scheduling the arrival of vehicles) to mitigate congestion on feeder routes.**

Heavy vehicle traffic is responsible for congestion especially around ports in the Western Cape. Also, heavy vehicles often get parked dangerously while waiting for their turn to receive loads at the ports and dangerously parked vehicles are a major safety risk for other road users. Using technology to coordinate the arrival and departure of vehicles at ports could reduce congestion and mitigate the practice of illegal parking. Trucks can be parked far from the ports and drivers will get notified when it's their turn to pick up loads. Such coordination could also improve port operations. The Western Cape Government could consider engaging Transnet and use appropriate platforms such as the Transnet Workgroup to coordinate the investigation and development of suitable technology solutions for port coordination.

Targeted Outcome of Action 5C-4

Developing technology solutions for coordinating traffic at ports in the Western Cape will minimise the negative impacts of road freight traffic around ports and has added benefits of improving the efficiency of port operations.

Action 5C-5	**Engage and support Transnet to complete a study to assess the impact of traffic to and from the Belcon intermodal facility.**

During the status quo review, Transnet indicated that a study to assess the impact of traffic from the Belcon facility was conducted in the past although it needed to be updated. When fully operational, the Belcon facility will be responsible for an increase in road freight traffic in the area surrounding the intermodal facility. This increase in traffic must be mitigated to reduce the negative impacts on other road users in the surrounding areas. In performing Action 5C-5, Transnet will take a lead, considering that the company has done work on this issue in the past and the Western Cape Government will provide necessary support and input.

Targeted Outcome of Action 5C-5

By performing Action 5C-5, the Western Cape Government and Transnet will develop information on the long-term impact of traffic from the Belcon intermodal facility. The Western Cape Government will use the output of the assessment to develop initiatives to mitigate the negative impacts of traffic from Belcon.

Action 5C-6	**Review and improve the application process for abnormal load permits to improve compliance.**

The DTPW administers abnormal load permit applications in the Western Cape but must coordinate the movement of the loads with local Municipalities. The DTPW retains all abnormal load permit application fees, despite local Municipalities providing certain services such as escort vehicles when loads pass through their areas. A review of the permit application process, to include options to share revenue from

the application process is necessary to encourage cooperation with local Municipalities in managing abnormal loads movement in the province.

Also, the Western Cape Government has no formal database to facilitate information sharing and the coordination of the permit application process. There is ongoing work to develop a system for streamlining the classification and registration of abnormal load vehicles and the Abnormal Vehicle Permit (AVP) and tracking system. Completing this work is important in improving the abnormal load permit application process and monitoring of abnormal loads in the province.

Targeted Outcome of Action 5C-6

The main outcome of Action 5C-6 is improved administration of the abnormal load permitting process because of better cooperation with local Municipalities and improved data sharing among stakeholders in abnormal loads management.

Action 5C-7	**Review the application fees for abnormal loads, and other ways to improve cost recovery.**

During the status quo review, concerns were raised that the abnormal load application fees in the Western Cape do not result in full recovery of the cost of the movement of abnormal loads. The fees for abnormal load permits are much less than the cost of infrastructure damage from abnormal load movement and other services such as the provision of escort vehicles for abnormal loads. Reviewing the application fees is, therefore, an important action to improve cost recovery and improve the sustainability of abnormal load movement in the Western Cape.

Targeted Outcome of Action 5C-7

The main outcome of Action 5C-7 is improved abnormal load movement cost recovery to reduce cost to Government and improve the sustainability of abnormal loads movement in the Western Cape.

Action 5C-8	**Conduct a study to develop an informed position on the application of off-peak freight movement regulations and alternative approaches to congestion management (e.g. freight congestion charging) in the Western Cape.**

Off-peak freight movement was mentioned in the PLTF (2016/17 – 2020/21), which includes a conclusion that the approach should not be pursued in the Western Cape because it may increase the cost of transport. The basis of this conclusion is not clear and case studies reviewed during the status quo revealed that several issues must be taken into consideration before such a conclusion is reached.

The approach is being considered at national level and amendments to the NRTA have been proposed to make provisions for off-peak freight movement. There is a

need to develop an informed position on the issue in the Western Cape to provide input into the national discussion or to reach a fact-based conclusion on the feasibility of the approach in the Western Cape. In addition, alternatives such as localised application of off-peak freight movement could be assessed.

Outcomes of Action 5C-8

Action 5C-8 will result in the Western Cape Government developing an evidence backed position on off-peak freight movement to develop strategies for implementing the approach or alternatives, if feasible.

4.8 Strategy for Western Cape Freight Technology and Innovation

Technology and innovation are increasingly playing a vital role in improving freight transport delivery and in mitigating some of the negative impacts of freight movements. The broad areas where technology adds value in freight transport delivery include:

- Regulation and law enforcement;
- Safety improvement;
- Asset and infrastructure preservation;
- Environmental impact reduction; and
- Freight industry productivity enhancement.

A key consideration in technology and innovation is the role that government, for example the Western Cape Government through DTPW, should play in promoting or supporting technology initiatives that improve freight transport delivery. In sectors such as road freight, significant work is ongoing to increase the role of technology, with most of it being initiated by the private sector. Such technology interventions generally include initiatives that improve the productivity of operators in the sector. Operators in the road freight sector often need to be highly efficient to remain competitive. Nevertheless, such innovation could be enhanced with public sector support, especially in funding relevant Research and Development (R&D). Up to now, entities such as the Council for Scientific and Industrial Research (CSIR), which receive government grant funding have had a significant role in innovation in the transport sector.

Another consideration for government is how to effectively regulate some of the technology and innovation initiatives. There are technology interventions that are not adequately catered for by existing legislation. In the freight transport sector, such technologies include innovations such as smart trucks, as discussed in Section 3.6.6, and will include electric vehicles (EVs) and semi-autonomous or autonomous freight vehicles in the future.

Several opportunities to develop freight technology and innovation initiatives were identified in the status quo review of the Western Cape freight landscape. Strategic objectives and actions have been proposed to support the development of these initiatives. These objectives and actions are summarised in Table 4-6.

Table 4-6: Technology and Innovation Strategic Programme Summary

Strategic Focus Area 6 – Technology and Innovation Strategic Programme	
Strategic Objective	
6A	Increase the role of suitable technology and innovation in promoting positive freight delivery outcomes in the Western Cape.
Strategic Actions	
6A-1	Develop a Western Cape freight transport technology roadmap and promote the adoption of the appropriate technology within the industry.

The strategic objective and action in Table 4-6 are discussed in more detail in the sections below.

4.8.1 Western Cape Freight Technology and Innovation

Suitable technology could improve freight transport outcomes in the Western Cape. Several technologies and innovations in freight have already been discussed in the strategic focus areas above and these include technology to improve productivity of the freight industry, technology for monitoring driver wellness, onboard weighing, WIM and technology for traffic coordination. This section covers interventions to support wider adoption of such technologies through improving the Western Cape Government's ability to coordinate and support freight technology and innovation.

4.8.1.1 Issues in Western Cape Freight Technology and Innovation

The challenge in technology and innovation in the Western Cape freight sector is:

Issue 6A	**Limited role of technology and innovation in supporting positive freight outcomes**

The above challenge is mainly a result of the lack of an appropriate framework for a structured, coordinated approach to the implementation of freight transport technology interventions in the Western Cape Government. Currently, there is no guiding strategy for identifying and evaluating technology initiatives that the Western Cape Government could support or implement. Engagement between Government and other stakeholders on technology and innovation initiatives has generally been project specific and on an ad-hoc basis. This includes the discussions regarding PBS and other initiatives such as Electric Vehicles (EVs). Such an approach does not permit ongoing coordination of technology and innovation initiatives. Also, the role that

Government should play in managing transport, including freight innovation initiatives is not clearly outlined and responsibilities for the initiatives are not clear within Government. As an example, while the DTPW has the primary responsibility for transport issues in the province, much of the discussion regarding EVs and Unmanned Aerial Vehicles (UAVs) has so far been championed by DEDAT and as a result these discussions have had a greater focus on the economic impact of these initiatives than on the transport delivery impacts in the province.

4.8.1.2 Strategic Objectives to Address Issues in Freight Technology and Innovation

The following objective is proposed to improve the application of suitable technology and innovation in freight transport.

Objective 6A	**Increase the role of suitable technology and innovation in promoting positive freight delivery outcomes in the Western Cape.**

To achieve this objective, the Western Cape Government will look to support wider adoption of technology and innovation for freight transport, both in Government and the private sector. There are several technology and innovation interventions that the Western Cape Government could support, and it is important to review suitability of the available solutions, including lifecycle costs for the interventions.

4.8.1.3 Strategic Actions to Achieve Objectives in Freight Technology and Innovation

The following strategic action is proposed to improve adoption of freight transport technology and innovation in the Western Cape.

Action 6A-1	**Develop a Western Cape freight transport technology roadmap and implement appropriate technologies to improve freight transport delivery.**

A technology and innovation roadmap could serve as a planning framework for freight technology and innovation in the Western Cape. Considering that freight is a component of the overall transport function in the province, the Western Cape Government could develop a broad transport technology and innovation roadmap, in which freight transport components will be included. Such a transport technology roadmap could include:

- Identification of key areas where technology and innovation add value.
- Identification of emerging technologies that the Western Cape could adopt. The status quo review included a discussion of emerging technologies in freight transport, some that the Western Cape Government is already monitoring, including electric vehicles (EVs), autonomous vehicles and unmanned aerial vehicles (UAVs).

- Determination of the role of Government in coordinating and supporting transport technology and innovation initiatives.
- Determination and provision of appropriate institutional capacity to coordinate and manage technology and innovation interventions.
- Investigation of appropriate technology partnerships with the private sector. There are several technology and innovation initiatives that the private sector has initiated. The Western Cape Government could use appropriate partnerships and take advantage of the existing work to improve freight transport outcomes.

In New South Wales (NSW), Australia, Transport for NSW developed a Future Transport Technology Roadmap in 2016 which aims to put NSW at the forefront of adopting emerging transport technologies and serves as an example of a roadmap that the Western Cape could develop.

Targeted Outcome of Action 6A-1

The main outcome of Action 6A-1 is a structured approach to the development and implementation of transport technology and innovation, which will lead to wider adoption of suitable technology and innovation to promote sustainable transport delivery in the Western Cape.

4.9 Strategy for Western Cape Freight Data and Information Management

Sound, evidence-based planning and decision-making is dependent on the availability and accessibility of high quality and reliable data.

Data availability and use also makes it possible to set measurable, realistic targets and to monitor progress towards achieving these targets. Several decisions or strategic interventions discussed in previous sections are reliant on good data.

In the Western Cape, freight planning and decision-making is negatively affected by the lack of quality data and information. A lack of fact-based decision making in the Western Cape was noted as a concern in different forums during the stakeholder engagement process.

Strategic objectives and actions were developed to address shortcomings in freight data and information management in the Western Cape. The objectives and actions are summarised in Table 4-7.

Table 4-7: Data and Information Management Strategic Programme Summary

Strategic Focus Area 7 – Data and Information Management Strategic Programme	
Strategic Objective	
7A	Improve freight data collection, analysis and information systems management in the Western Cape.
Strategic Actions	
7A-1	Develop a Western Cape Transport Data and Information Management and Governance Strategy.
7A-2	Review the functional specifications of the proposed Western Cape Government DTPW Transport Hub to ensure inclusion of freight needs.
7A-3	Review the Western Cape transport management and systems reporting to include metrics that are relevant to freight.
7A-4	Investigate and identify technology interventions to automate data collection processes that are currently manual.
7A-5	Assess and improve freight data analytics capacity and skills in the Western Cape.

The freight data and information management strategic objectives and actions are discussed in detail in the sections below.

4.9.1 *Issues in Freight Data and Information Management*

Several data and information management shortcomings exist in the Western Cape and these inhibit the development of fact-based, data-driven strategy and programmes. The key issues identified in the status quo review are:

Issue 7A Existence of fragmented information systems, monitoring and reporting.

Several freight information systems exist in the Western Cape. However, there is currently no coordinated approach to the implementation of the systems. Greater coordination among the systems could increase the value of the information and data generated. The Western Cape has no consolidated freight data set that is regularly updated and that can be used to plan and monitor freight delivery.

Issue 7B Insufficient data sharing.

Freight information data and information sharing is an ongoing challenge because of the existing fragmentation. Improved sharing of data is important to ensure consistency, given that there are interrelations among data sets developed in the Western Cape. In addition, greater information sharing reduces duplication of the information gathering effort.

Issue 7C Manual data collection processes.

Manual data collection processes require greater human capacity and increase the cost of data management. In addition, manual data collection is more prone to error. Examples of manual data collection processes include the collating of road accidents data and uploading of this data onto the iPAS system.

Issue 7D Lack of freight insights in certain data sets in the Western Cape.

Certain data sets in the province are developed from a general transport perspective and do not include a breakdown of information that is specific to freight transport. As an example, certain crash statistics available at the time of the status quo review did not include detail on vehicle classification (e.g. heavy goods vehicle). Such classification is necessary to determine the extent to which freight is responsible for traffic crashes in the Western Cape. Data that is specific to freight (e.g. heavy vehicle related fatalities per 100 million kilometres) is valuable in the development of interventions to minimise freight-related accidents and in benchmarking against international best practices.

4.9.1.1 *Strategic Objectives to Address Issues in Freight Data and Information Management*

Issues 7A through 7D all fall under broad data and information management and can, therefore, be addressed by a single broad objective. The following objective is

proposed to address freight data and information management shortcomings in the Western Cape.

Objective 7A	**Improve freight data collection, analysis and information systems management in the Western Cape.**

Specific actions to address the different issues were developed under this broad objective and these are discussed below.

4.9.1.2 Strategic Actions to Achieve Objectives in Freight Data and Information Management

The proposed actions to improve freight data collection, analysis and information systems management are:

Action 7A-1	**Develop a Western Cape Transport Data and Information Management and Governance Strategy.**

A Transport Data and Information Management and Governance Strategy is useful in coordinating activities to generate and use data. The strategy could include actions for:

- Data systems integration to eliminate fragmentation. This includes integration within DTPW and integration with local Municipalities;
- Data sharing and reporting procedures;
- An appropriate organisation structure for managing transport data in the Western Cape. Case studies developed during the status quo review show that there is a trend towards setting standalone entities with the sole responsibility of managing transport data and information systems within Government. Examples of such entities include Transport Performance and Analytics (TPA) in New South Wales (NSW), Australia and the United States Department of Transport Bureau of Transport Statistics (BTS). The BTS, for example, has a mandate enshrined in law, and is held legally accountable for delivering on certain data and information management functions.
- Identification of key transport data needs in the Western Cape. Several data needs have been discussed under the strategic focus areas above, which could be included in such a needs assessment. These include:
    - A Freight Demand Model incorporating cost of logistics, externalities, beneficiation scenarios;
    - Traffic accident statistics;
    - Traffic offender databases and other law enforcement statistics; and
    - Overload control statistics.

Considering that the Western Cape Government has an ongoing project on the development of the DTPW Transport Hub, discussed below, the above actions can be made part of the overall transport data management initiatives and updated to incorporate needs that are specific to freight, where required.

Targeted Outcome of Action 7A-1

A Transport Data and Information Management and Governance Strategy for the Western Cape will improve coordination of information and data gathering to reduce duplication and to improve quality of transport data.

Action 7A-2	**Review the functional specifications of the proposed Western Cape Government DTPW Transport Hub to ensure inclusion of freight needs.**

The DTPW Transport Hub currently has a focus on public transport. Over time, it will be necessary to incorporate freight aspects, considering the interfaces of freight and public transport, which make it necessary to manage the two together. Several freight data sets such as freight crash statistics and overloading statistics may be included in the Transport Hub and managed centrally with other transport data in the province. Also, managing all transport, including freight data centrally leads to human capacity optimisation and improves the integration of data.

Targeted Outcome of Action 7A-2

Performing Action 7A-2 will improve the integration of freight and public transport data, which will increase the value and minimise the cost of transport data management in the Western Cape.

Action 7A-3	**Review the Western Cape transport management and systems reporting to include metrics that are relevant to freight.**

Several transport reports such as crash statistics for the Western Cape currently have a bias towards public transport. While a certain level of freight data is included, there is room to improve reporting on freight by including more freight metrics. Such metrics include heavy vehicle crashes per 100 million kilometres in the Western Cape, which is useful for benchmarking road freight safety in the province against international best practices.

Targeted Outcome of Action 7A-3

The main outcome of Action 7A-3 is improved monitoring of key freight metrics in the Western Cape. This will enable the western Cape Government to develop appropriate corrective measures to address deficient performance in certain metrics. Also, improved monitoring and reporting of freight metrics will enable the Western Cape Government to set data backed baselines and targets for freight transport

performance and to benchmarks the province's freight transport performance against international best practices.

Action 7A-4	**Investigate and identify technology interventions to automate data collection processes that are currently manual.**

The manual data collection processes in the Western Cape are expensive and require high human capacity. In addition, manual data processes are prone to error. Data collection technology and innovation could reduce the cost of collecting data in the Western Cape.

Lower cost of collecting data will make it possible for the Western Cape Government to develop large data sets, which provide improved ability to generate useful insights and strengthen transport decision making in the province. Suitable data collection technologies can be investigated in the Western Cape Technology Roadmap discussed under Action 6A-1.

Targeted Outcome of Action 7A-4

The main outcomes of performing Action 7A-4 are a reduction in the cost of transport data collection and an improvement in the quality and quantity of data collected in the Western Cape.

Action 7A-5	**Assess and improve freight data analytics capacity and skills in the Western Cape.**

Data analytics skills will become important as data becomes more widely used in managing transport in the Western Cape Government. The value of data generated increases with improved ability to draw insights from it. Also, several data sources discussed in this Strategy such as the FDM and dashboards to monitor capacity of the freight network, freight logistics costs and externalities are new in the Western Cape Government. As a result, there is a need to review existing capacity in the Western Cape Government to identify gaps that must be addressed to improve the province's ability to make use of these tools. This action must be coordinated with the actions to address freight institutional capacity discussed in Section 4.3.3. In addition, training programmes could be developed to upskill current staff to handle data and this could reduce the need to create or fill positions dedicated to freight transport data analytics in the Western Cape Government. Action 7A-5 should be coordinated with initiatives to improve capacity and skills for data analytics in other functions such as those for public transport delivery in the Western Cape.

Targeted Outcome of Action 7A-5

The outcome of improving data analytics capacity in the Western Cape Government is increased value of data generated because of improved ability of staff to draw insights from the data.

5 FREIGHT STRATEGY IMPLEMENTATION

5.1 Overview

To complement the Freight Strategy an Implementation Programmes has been developed to guide practical implementation and application of the strategic actions. It provides a step by step approach required to achieve the strategic objectives supporting the vision and helps to translate strategic actions into a realistic plan that will ultimately drive impact.

The comprehensive list of strategic actions developed as part of the Draft Freight Strategy has been included in the Implementation Programme. However, due to complexities of implementing many of the actions, an incremental approach has been adopted. The Freight Strategy Implementation Programme has, therefore, been separated into two stages, a preparatory stage (Stage 1) made up of initial actions, and a second stage (Stage 2) made up of a more comprehensive list of actions representing the bulk of the strategic contents. The initial actions are to be implemented in the Western Cape Government's 2018/19 financial year, while the full list of strategic actions will be implemented in 2019/20 financial year and beyond.

The Implementation Programme for the Freight Strategy focusses on Stage 1 actions and includes the following:

- A Theory of Change – including the strategy outputs, desired outcomes, influencers, affected groups and the key assumptions made in developing the Freight Strategy;
- Initial prioritisation of strategic actions;
- Performance indicators for strategic objectives and actions; and
- Assignment of roles and responsibilities for performing strategic actions.

The full version of this Implementation Programme is presented in a separate document, which must be referred to for detailed information on the Freight Strategy implementation. This chapter presents a brief overview of the incremental approach taken and the Implementation Programme content for Stage 1.

5.2 Incremental Approach

The incremental approach allows for a certain level of pre-implementation preparation and a step-wise process to implementation. In this context, the incremental approach is informed by a similar approach adopted under the Provincial Sustainable Transport Programme (PSTP). The PSTP was developed by the Department of Transport and Public Works to work towards a more sustainable transport system in general, with an initial focus on public transport systems and non-motorised transport in priority Municipalities in the Western Cape.

Taking guidance from the PSTP, the incremental approach envisaged for implementation of the Western Cape Freight Strategy has several key components that aim to get the basics right with regards to freight transport delivery. This is needed to build a robust foundation from which implementation of the proposed strategic

actions will progress. The adoption of an incremental approach for the delivery of the Freight Strategy is guided by the following:

- The need to further refine and develop certain strategic actions, and incorporate additional stakeholder input;
- The need for significant preparation work to set up procedures to adequately track progress towards achieving freight objectives, for example, setting realistic indicators, baselines and targets for monitoring purposes. The Western Cape Government freight management function is not yet fully developed and in many cases data and information required to set baselines and targets is lacking. Developing such information is important to ensure fact-based decision-making and to set measurable targets for proposed strategic actions; and
- The need to bolster the institutional and operational systems for freight delivery within the Provincial Government to prepare for implementation of the full set of actions, taking into consideration the existing constraints and immediate needs.

Following this logic, the implementation of the Strategy has, therefore, been divided into two stages, shown in Figure 5-1.

Incremental approach to Freight Strategy delivery

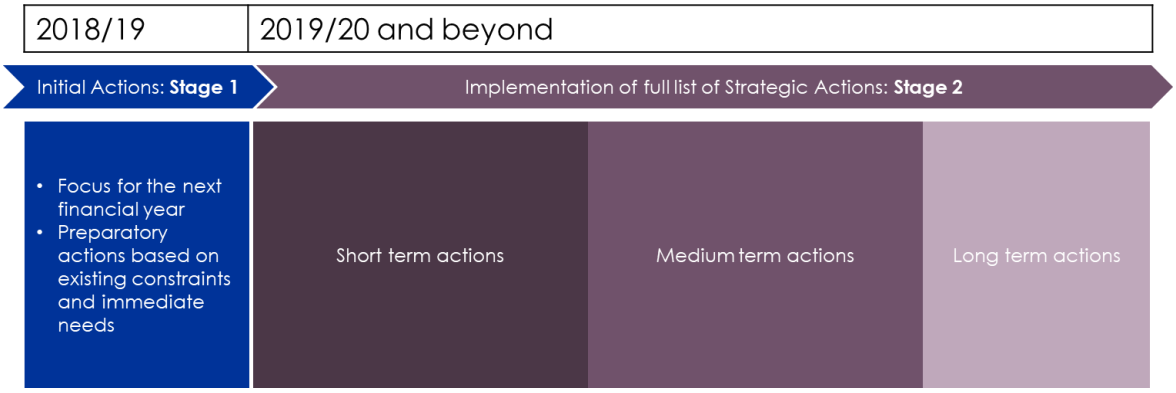

Figure 5-1: Incremental approach to Freight Strategy delivery

5.3 Overview of Implementation Programme Actions

Based on the approach described above, the two stages to implementation of the Freight Strategy will occur as follows:

5.3.1 Stage 1 of the Implementation Programme: Initial Actions for 2018/19

Stage 1 is made up of the initial actions developed in the Western Cape Freight Strategy to be implemented in the Western Cape Government's 2018/19 Financial Year. The logframe matrix, which is included as a separate spreadsheet that accompanies the full Implementation Programme document contains the following:

- The list of initial Stage 1 actions to be performed during the 2018/19 financial year;

- A description of the desired outcome and what will be monitored during the period;
- The approximate starting dates for each action as well as the duration for implementation;
- A monitoring tool to track the progress of each item, allowing the percentage (%) completion of the task to be recorded; and
- The draft Stage 2 actions to be finalised during Stage 1.

The logframe will be used as a basis for:

- Planning internal sub-tasks or interventions required to complete strategic actions;
- Recording the status of completed or in-progress actions;
- Reporting progress made towards completing the actions; and
- Devise interventions to fast track the implementation of actions which fall behind schedule.

In Stage 1, certain strategic actions will be prioritised to lay a foundation for the implementation of all the full set of Stage 2 strategic actions developed in Chapter 4. Most of the strategic actions in Stage 1 fall into the following strategic focus areas:

- **Strategic Focus Area 1 – Planning, Coordination and Institutional Arrangements:** The prioritised actions for this strategic focus area include actions to establish institutions to coordinate the implementation of the Freight Strategy and the provision of capacity in the Western Cape Government to perform tasks in the Freight Strategy.
- **Strategic Focus Area 6 – Data and Information Management:** The prioritised actions for this strategic focus area include actions to collect data to set baselines and targets for the strategic objectives and actions in Chapter 4. Several indicators of strategic objective and actions in the Freight Strategy are reliant on data from the Freight Demand Model (FDM) developed concurrently with the Strategy. This FDM will be available at the end of the Freight Strategy development process and, therefore, further work is necessary to incorporate data from the model to develop fact-based baselines and targets.

Desired outcomes of 2018/19 actions

The initial actions envisioned for the Western Cape Government's 2018/19 financial year have several desired outcomes, as listed below:

- Development of adequate internal capacity and provision of sufficient resources to the DTPW entities responsible for performing certain actions of the Freight Strategy;
- Development of strong partnerships within the DTPW and Western Cape Government, and across the other spheres of government;
- Improving Governments' relationship with operators and the private sector as a basis for continual coordination regarding Freight Strategy initiatives;

- Establishment of clear mandates, roles and responsibilities among the various stakeholders;
- Setting up a performance measurement process to track the progress of both the DTPW and the Province in achieving the strategic objectives outlined in the Freight Strategy;
- The collection of adequate data and generation of freight performance metrics to inform decision making and to assess the effectives of the interventions proposed in the Freight Strategy.

Stage 1 Strategic Actions

The actions to be performed in Stage 1 of implementation of the Freight Strategy are presented in Table 5-1.

Table 5-1: Stage 1 Strategic Actions

	2018/19 ACTIONS	Desired Outcomes
1	**Review existing freight planning and coordination fora.**	**Inclusion of freight coordination requirements in the mandates of existing fora.**
1.1	Finalise the Provincial Transport Management Forum (PTMF) Terms of Reference (TOR).	Approval of PTMF TOR and inclusion of freight transport provisions to support the implementation of the Provincial Freight Strategy.
2	**Refine Stage 2 of the Freight implementation programme**	**Finalised Freight Implementation programme for implementation from 2019/20 onwards.**
2.1	Finalise logframe monitoring and evaluation framework for the full list of Freight Strategy actions.	Completed logframe for monitoring and evaluation of the Freight Strategy actions.
2.2	Determine baseline metrics for all objective and action indicators.	Appropriate baseline metrics set for all objective and action indicators to use in monitoring progress in implementing the Freight Strategy.
2.3	Set targets for objective and action indicators.	Targets for all objectives and action indicators to use in monitoring progress against baselines in implementing the Freight Strategy.
2.4	Determine resources required to deliver Freight Strategy actions.	Determination, justification and motivation for resources required to deliver strategic actions.
2.5	Prioritisation of implementation programme actions, including assigning starting year and monitoring frequency.	Schedule for implementing strategic actions and monitoring frequency.

	2018/19 ACTIONS	Desired Outcomes
2.6	Assign responsibilities for performing strategic actions.	Assignment of responsibilities to relevant parties who will implement actions.
3	**Update, finalise and approve the Draft Freight Strategy**	**Finalised freight strategy including additional stakeholder input and results of the Freight Demand Model**
4	**Finalise Western Cape Transport Implementation Programme**	**Finalised Western Cape Transport Implementation Programme, including actions from the freight implementation programme.**
4.1	Incorporate prioritised Freight Implementation Programme actions into Finalised Transport Implementation Programme.	
5	Fill existing vacancies in the department to ensure capacity to deliver on freight mandate.	**Adequate capacity to implement the Freight Strategy.**
6	Ensure ongoing updating of the provincial Freight Demand Model (FDM) through an agreement with specialist consultants and ongoing skills transfer for this task to be performed internally in future.	**Annually updated FDM**
7	Incorporate freight requirements in the Western Cape Transport Data Hub.	**Incorporation of freight requirements in the Transport Hub for freight data and information to be managed centrally with other transport data in the province.**

5.3.2 Stage 2 of the Implementation Programme: Draft Actions for 2019/20 and beyond

Stage 2 involves the implementation of the full set of strategic actions as described in Chapter 4. The full set of actions, including the proposed draft performance indicators, expected results and the preliminary assignment of roles and responsibilities, is presented in the detailed logical framework attached to the detailed implementation programme for the Freight Strategy. These actions, and the estimated timeframes for implementation are presented in the sections below.

5.3.2.1 Strategic Focus Area 1

	Outcome	
	Improved planning, coordination, implementation and management	
	Primary Output	
	Strengthened and capacitated institutional bodies	

1A	Strategic Objective	
	Strengthen coordination of freight planning and delivery within the DTPW.	
	Actions	Timeframe
1A-1	Review the freight intra-departmental institutional coordination strategy and structure and make amendments where necessary.	Short term (1-3 yrs)

1B	Strategic Objective	
	Strengthen coordination of freight planning and delivery between the DTPW, other Western Cape Government Departments, Local Municipalities and other external stakeholders, including the National Department of Transport, Transnet and the private sector.	
	Actions	Timeframe
1B-1	Review freight transport provisions for the proposed Provincial Transport Management Forum (PTMF) to ensure that freight coordination between the DTPW, other Western Cape Government Departments, Local Municipalities and other external stakeholders, including the National Department of Transport, Transnet and the private sector is adequately provided for.	Short term (1-3 yrs)

1B	Strategic Objective	
	Strengthen coordination of freight planning and delivery between the DTPW, other Western Cape Government Departments, Local Municipalities and other external stakeholders, including the National Department of Transport, Transnet and the private sector.	
	Actions	Timeframe
1B-2	Review planning cycles and timelines of transport policy (e.g. Provincial Land Transport Framework (PLTF) and strategy to improve alignment with cycles of related policy such as the Provincial Spatial Development Framework (PSDF) and Infrastructure Framework and to ensure that the policies inform one another.	Long term (5-10 yrs)
1B-3	Review and amend Terms of Reference for the proposed Transnet Workgroup and identify needs for similar workgroups involving other stakeholders besides Transnet.	Medium term (3-5 yrs)

1C	Strategic Objective	
	Improve capacity of Provincial and Local Government to plan, implement and coordinate freight, including the implementation of the provincial Freight Strategy.	
	Actions	Timeframe
1C-1	Identify the freight transport function support needs of Municipalities and assess opportunities for Province to support where capacity is available, including the introduction of a freight transport support platform if appropriate.	Medium term (3-5 yrs)

1C	Strategic Objective	
	Improve capacity of Provincial and Local Government to plan, implement and coordinate freight, including the implementation of the provincial Freight Strategy.	
	Actions	**Timeframe**
1C-2	Review DTPW's freight organisational design to identify and eliminate functional overlaps and support local Municipalities in doing the same.	Short term (1-3 yrs)
1C-3	Prioritise the filling of available positions that are critical to the successful implementation of a Freight Transport Strategy in the Western Cape.	Short term (1-3 yrs)
1C-4	Develop appropriate partnerships with the private sector to develop freight competencies in the DTPW.	Medium term (3-5 yrs)
1C-5	Use appropriate performance review and employee surveys to identify freight skills development needs and to enhance education, training and development programmes in the DTPW.	Medium term (3-5 yrs)
1C-6	Enhance freight skills transfer between WCG staff, Local Municipality staff and outsourced staff.	Medium term (3-5 yrs)
1C-7	Assess the potential of technology for improving productivity and effectiveness of teams.	Short term (1-3 yrs)
1C-8	Encourage and support self-directed, informal learning.	Short term (1-3 yrs)
1C-9	Identify additional internal capacity requirements in the DTPW and initiate motivation for these additional resources.	Medium term (3-5 yrs)

5.3.2.2 Strategic Focus Area 2

	Outcome	
	Decreased freight transport intensity and improved freight industry productivity; True cost of freight more sufficiently captured	
	Primary Output	
	Effective demand management interventions and freight industry productivity initiatives	

2A	Strategic Objective	
	Improve information available to the Western Cape Government regarding freight demand management opportunities in the province.	
	Actions	Timeframe
2A-1	Annual update of the Western Cape Freight Demand Model, including the incorporation of local value addition and beneficiation scenarios to quantify the freight demand benefits of the initiatives and use its insights to influence in favour of positive freight outcomes.	Short term (1-3 yrs)

2B	Strategic Objective	
	Minimise the Western Cape's freight transport intensity by promoting and supporting appropriate freight transport demand-side management measures.	
	Actions	Timeframe
2B-1	Support DEDAT and DoA to implement local beneficiation and value addition initiatives to reduce demand for long distance freight, where possible.	Medium term (3-5 yrs)

2B	Strategic Objective	
	Minimise the Western Cape's freight transport intensity by promoting and supporting appropriate freight transport demand-side management measures.	
	Actions	Timeframe
2B-2	Integrate freight transport and spatial planning, working with DEA&DP, to reduce future demand for certain freight.	Long term (5-10 yrs)
2B-3	Identify opportunities to support DEA&DP in developing waste minimisation programmes in the Western Cape.	Medium term (3-5 yrs)

2C	Strategic Objective	
	Improve productivity in the freight industry by enhancing the Western Cape Government's support of appropriate freight industry productivity initiatives.	
	Actions	Timeframe
2C-1	Engage the road freight industry to identify and support initiatives, technology and innovation for improving the sector's productivity e.g. finalising PBS and developing a position on High Cube, where such initiatives align with the strategic objectives of the Freight Strategy.	Short term (1-3 yrs)

5.3.2.3 Strategic Focus Area 3

	Outcome	
	Optimal freight modal balance	
	Primary Output	
	Adoption of appropriate strategies to promote modal shift	

3A	Strategic Objective	
	Optimise the freight modal share in the Western Cape.	
	Actions	Timeframe
3A-1	Use the Western Cape Freight Demand Model (FDM) to Quantify freight that is currently transported by road and can be shifted to alternative modes and use the output to set modal shift targets in the province.	Medium term (3-5 yrs)
3A-2	Develop a monitoring tool for tracking progress towards modal shift targets in the Western Cape province.	Short term (1-3 yrs)
3A-3	Use information on the full cost, including externality costs, of different modes to develop and implement programmes to improve industry awareness of the negative impacts of road freight to encourage the adoption of rail for moving appropriate freight.	Short term (1-3 yrs)
3A-4	Develop a suitable, adaptable tool and dashboard based on the outputs of the Freight Demand Model (FDM) to monitor all important metrics, including freight logistics and externality costs.	Medium term (3-5 yrs)

3A	Strategic Objective	
	Optimise the freight modal share in the Western Cape.	
	Actions	Timeframe
3A-5	Assess policy (e.g. user charging), incentives or regulation for promoting the shift of freight from road to alternative modes and implement suitable options to enhance modal shift in the province.	Medium term (3-5 yrs)
3A-6	Support the development of more waste-on-rail projects in the Western Cape in partnership with DEA&DP, local Municipalities, Transnet and the private sector.	Medium term (3-5 yrs)
3A-7	Conduct a survey to determine user perceptions regarding rail and use appropriate information and awareness campaigns to change perceptions.	Short term (1-3 yrs)

5.3.2.4 Strategic Focus Area 4

	Outcome	
	Ability of the freight network to meet demand	
	Primary Output	
	Adequate planning, management and maintenance of freight assets	

4A	Strategic Objective	
	Improve capacity, condition and interconnectivity of freight transport infrastructure to meet demand in a sustainable manner.	
	Actions	Timeframe
4A-1	Develop and utilise an appropriate framework to monitor capacity and condition of freight infrastructure, with input from service providers such as Transnet, SANRAL and DTPW Road Network Management Chief Directorate.	Short term (1-3 yrs)
4A-2	Use appropriate platforms (e.g. Transnet Workgroup when finalised) for ongoing engagement with Transnet to identify areas where Government support is required in the provision of adequate network capacity.	Short term (1-3 yrs)
4A-3	Identify opportunities for partnerships with the private sector to provide freight infrastructure in certain areas.	Medium term (3-5 yrs)

4B	Strategic Objective	
	Improve freight network access, including for industries and communities outside of major urban centres through the provision of appropriate infrastructure.	
	Actions	Timeframe
4B-1	Identify strategic branch lines within the WC and advocate for their prioritisation in the DoT and Transnet strategies.	Long term (5-10 yrs)

4B	Strategic Objective	
	Improve freight network access, including for industries and communities outside of major urban centres through the provision of appropriate infrastructure.	
	Actions	Timeframe
4B-2	Develop partnerships with local Municipalities for provision of infrastructure required to improve access for local users.	Medium term (3-5 yrs)
4B-3	Identify other locations for future intermodal facilities.	Medium term (3-5 yrs)
4B-4	Work with Transnet to identify additional applications of intermodal technology such as bi-modal semi-trailers.	Medium term (3-5 yrs)

5.3.2.5 Strategic Focus Area 5

	Outcome	
	Reduction in safety incidents, overloading and increased freight operator compliance	
	Primary Output	
	Effective traffic management	

5A	Strategic Objective	
	Reduce the number of freight-related, heavy vehicle crashes in the Western Cape.	
	Actions	Timeframe
5A-1	Assess the feasibility of establishing a law enforcement network of one-stop measurement sites to measure overloading, verify regulatory compliance around permits and licences, check driver wellness and inspect vehicle roadworthiness.	Short term (1-3 yrs)

5A	Strategic Objective	
	Reduce the number of freight-related, heavy vehicle crashes in the Western Cape.	
	Actions	Timeframe
5A-2	Identify key driver skills needs in consultation with road freight sector and develop programmes to improve driver competencies in partnership with the private sector and the Transport Education Training Authority (TETA).	Medium term (3-5 yrs)
5A-3	Support safety awareness campaigns (e.g. those by Arrive Alive and Safely Home) and incorporate a freight focus, including freight risks, issues and statistics where appropriate.	Short term (1-3 yrs)
5A-4	Develop programmes to improve driver wellness and working conditions, including the use of appropriate technology (e.g. drowsiness detection) to improve driver performance, working in partnership with the road freight sector.	Medium term (3-5 yrs)
5A-5	Conduct a survey to determine industry impediments to adopting RTMS and use the results to identify ways to promote the programme to improve voluntary compliance.	Short term (1-3 yrs)
5A-6	Assess the feasibility of developing more truck stops to reduce incidents of dangerous heavy vehicle parking and to promote driver wellness.	Short term (1-3 yrs)

5A	Strategic Objective	
	Reduce the number of freight-related, heavy vehicle crashes in the Western Cape.	
	Actions	Timeframe
5A-7	Use traffic enforcement data generated in the DTPW and in programmes such as Arrive Alive to identify heavy vehicle traffic congestion and crash hotspots to develop appropriate interventions to mitigate their impact.	Short term (1-3 yrs)
5A-8	Review Departmental process to monitor freight traffic enforcement capacity and improve capacity where appropriate	Medium term (3-5 yrs)

5B	Strategic Objective	
	Reduce the proportion of overloaded vehicles and the average overload size in the Western Cape.	
	Actions	Timeframe
5B-1	Expand efforts to monitor weighbridge avoidance routes including provision of resources for more roadside screening along known weighbridge avoidance routes.	Medium term (3-5 yrs)
5B-2	Assess the feasibility of developing more Weigh-in-Motion (WIM) sites to improve compliance and develop additional sites if feasible.	Medium term (3-5 yrs)
5B-3	Determine the resources required to increase weighbridge operating hours for weighbridges currently operating for less than 24 hours and provide such resources where feasible.	Medium term (3-5 yrs)

5B	Strategic Objective	
	Reduce the proportion of overloaded vehicles and the average overload size in the Western Cape.	
	Actions	Timeframe
5B-4	Review the Western Cape penalty structure for overloading to assess opportunities to enhance its effectiveness as a deterrent.	Medium term (3-5 yrs)
5B-5	Engage the road freight sector to promote the adoption of technologies such as on-board weighing.	Long term (5-10 yrs)
5B-6	Review the overload control legal framework to identify ways of improving its effectiveness in ensuring successful prosecution of offenders.	Medium term (3-5 yrs)
5B-7	Develop a database of the main road freight offenders which is shared with other traffic enforcement functions.	Long term (5-10 yrs)
5B-8	Review the current 5% allowable overload limit to reduce the practice of deliberate overloading within this limit.	Medium term (3-5 yrs)
5B-9	Assess the potential incentive options to promote voluntary overload control compliance and implement the options that are feasible.	Medium term (3-5 yrs)
5B-10	Assess the feasibility of a 'Chain-of-responsibility' approach that requires consignor, consignees, hauler and drivers to be held liable for overloading and coordinate this with a similar proposed amendment to the National Road Traffic Act (No. 93 of 1996) (NRTA).	Medium term (3-5 yrs)

5C	Strategic Objective	
	Reduce the negative impact of general freight, abnormal load and dangerous goods movement on traffic flow and infrastructure.	
	Actions	Timeframe
5C-1	Finalise the development of a provincial Abnormal Load Route framework for the Western Cape and identify key routes that require interventions such as infrastructure enhancement.	Short term (1-3 yrs)
5C-2	Engage DEA&DP and provide support in the development of a provincial Dangerous Goods Route Framework.	Medium term (3-5 yrs)
5C-3	Improve coordination of abnormal load and dangerous goods movement with local Municipalities through improved engagements and a review of existing abnormal load coordination institutional arrangements and bylaws.	Long term (5-10 yrs)
5C-4	Assess the use of mobile applications or other technology for coordinating traffic around ports (e.g. scheduling the arrival of vehicles) to mitigate congestion on feeder routes.	Medium term (3-5 yrs)
5C-5	Engage and support Transnet to complete a study to assess the impact of traffic to and from the Belcon intermodal facility.	Medium term (3-5 yrs)
5C-6	Review and improve the application process for abnormal load permits to improve compliance.	Short term (1-3 yrs)
5C-7	Review the application fees for abnormal loads, and other ways to improve cost recovery.	Medium term (3-5 yrs)

5C	Strategic Objective	
	Reduce the negative impact of general freight, abnormal load and dangerous goods movement on traffic flow and infrastructure.	
	Actions	Timeframe
5C-8	Conduct a study to develop an informed position on the application of off-peak freight movement regulations and alternative approaches to congestion management (e.g. freight congestion charging) in the Western Cape.	Medium term (3-5 yrs)

5.3.2.6 Strategic Focus Area 6

	Outcome	
	Improved freight efficiency and management effectiveness from adoption of technology	
	Primary Output	
	Use of appropriate technology and innovation	

6A	Strategic Objective	
	Increase the role of suitable technology and innovation in promoting positive freight delivery outcomes in the Western Cape.	
	Actions	Timeframe
6A-1	Develop a Western Cape freight transport technology roadmap and promote the adoption of the appropriate technology within the industry.	Medium term (3-5 yrs)

5.3.2.7 Strategic Focus Area 7

	Outcome	
	Enhanced decision making from improved data use	
	Primary Output	
	Adequate data collection, analysis and information systems management	

7A	Strategic Objective	
	Improve freight data collection, analysis and information systems management in the Western Cape.	
	Actions	Timeframe
7A-1	Develop a Western Cape Transport Data and Information Management and Governance Strategy.	Short term (1-3 yrs)
7A-2	Review the functional specifications of the proposed Western Cape Government DTPW Transport Hub to ensure inclusion of freight needs.	Short term (1-3 yrs)
7A-3	Review the Western Cape transport management and systems reporting to include metrics that are relevant to freight.	Short term (1-3 yrs)
7A-4	Investigate and identify technology interventions to automate data collection processes that are currently manual.	Medium term (3-5 yrs)
7A-5	Assess and improve freight data analytics capacity and skills in the Western Cape.	Short term (1-3 yrs)

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